draft 1978 environmental impact report

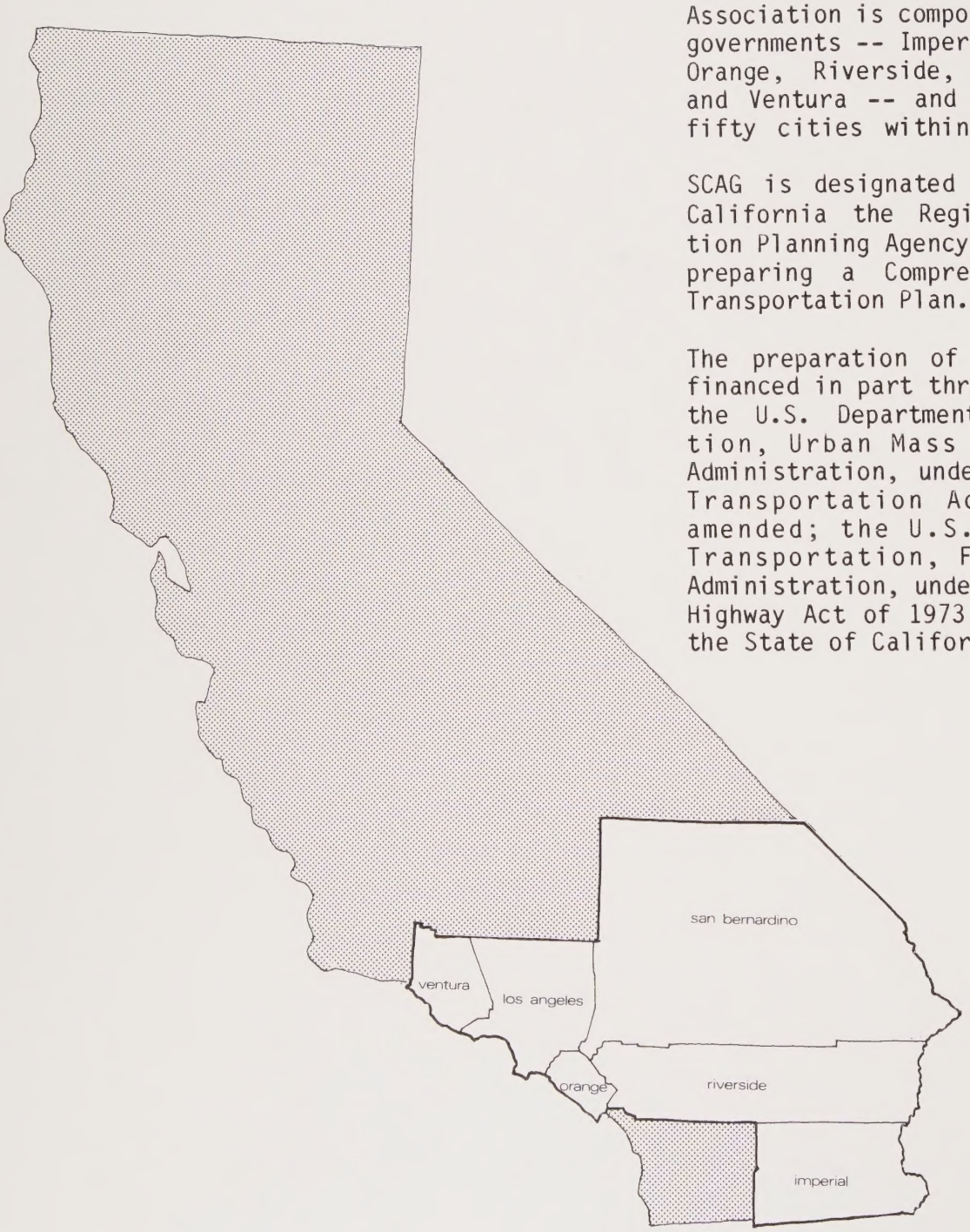
regional transportation plan

southern california association of governments

The Southern California Association of Governments (SCAG) was formed by local elected officials in 1965 to deal with issues of regional concern. SCAG is a partnership of local governments joined together in voluntary agreements under the Joint Exercise of Powers Section of the California Government Code. The Association is composed of six county governments -- Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura -- and over one hundred fifty cities within these counties.

SCAG is designated by the State of California the Regional Transportation Planning Agency, responsible for preparing a Comprehensive Regional Transportation Plan.

The preparation of this report was financed in part through a grant from the U.S. Department of Transportation, Urban Mass Transportation Administration, under the Urban Mass Transportation Act of 1964, as amended; the U.S. Department of Transportation, Federal Highway Administration, under the Federal Aid Highway Act of 1973, as amended; and the State of California.



PUBLIC PARTICIPATION KEY DATES

WORKSHOPS

May 23 1:30 - 5 PM	Imperial County 1100 Main Street El Centro
May 31 1:30 - 5 PM 7 - 9 PM (E & H only*)	Los Angeles County Los Angeles Area Chamber of Commerce 404 S. Bixel Los Angeles
June 2 1:30 - 5 PM (E & H evening workshop; see date and place noted below*)	Ventura County Oxnard Community Center 800 Hobson Way Oxnard
June 6 1:30 - 5 PM 7 - 9 PM (E & H only*)	San Bernardino County San Bernardino Convention Center 303 N. E Street San Bernardino
June 7 1:30 - 5 PM 7 - 9 PM (E & H only*)	Riverside County Raincross Square 3443 Orange St. Riverside
June 8 1:30 - 5 PM 7 - 9 PM (E & H only*)	Orange County Garden Grove Community Meeting Center 11300 Stanford Garden Grove

PUBLIC HEARING

June 22 1:30 - 5 PM 7 - 9 PM	Patriotic Hall 1816 S. Figueroa Los Angeles

* (E & H - Persons who are elderly and/or handicapped)
At each location and concurrently with the Transportation Plan and EIR workshops (which are to be held in the afternoon) a special workshop dealing with the transportation of elderly persons and of persons who are handicapped will be held. This workshop will be repeated in the evening (except in Ventura County, where the evening workshop for elderly and handicapped persons will be held on Thursday, June 1, at the Garden Grove Elementary School, 2250 Tracy Avenue, in Simi Valley, from 7:00 - 9:00 p.m.)

For the convenience of persons wishing to attend, but who cannot because of lack of accessible transportation, special arrangements for transportation may be possible. Contact Cleo Johnston at SCAG, 600 South Commonwealth, Suite 1000, Los Angeles, CA 90005; (213) 385-1000.

FOREWORD

While transportation recommendations must be based on the best available information, political decisions are ultimately required. And these decisions must reflect the public will. When risks must be measured against benefits, when economic and environmental values must be weighted and balanced, the public has the right and the obligation to make its views known.

SCAG welcomes public participation, because informed and involved citizens and citizen groups are essential for action to improve our regional transportation system. The views, opinions, needs and desires of the public will continue to be sought as SCAG updates the regional plan.

What can you do to make a difference in the transportation planning process?

First of all, get informed about local, regional and state transportation proposals, plans and programs. Once you have this basic information, the next step is to evaluate it within your own experience, based on where you live and travel.

Then, determine what you want in transportation, now and in the future. Take your ideas, requests and suggestions to your local elected officials, to planners, or to others who are working on the problems.

Get involved with your neighborhood or community planning group. Find out who does this work in your area. Encourage civic and local organizations to have programs on transportation issues.

And be sure to let us know at SCAG how you feel about transportation. We invite your participation in public hearings, forums, workshops, and by writing or calling us. SCAG encourages public input and involvement -- yes, and even prodding and constructive criticism of its regional planning program.

For further information, please contact the SCAG Community Relations Office.

The Southern California Association
of Governments
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Los Angeles, California 90005
(213) 385-1000

DRAFT ENVIRONMENTAL IMPACT REPORT

for the 1978
Regional
Transportation
Plan

Prepared By
SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS

MAY, 1978

The Draft Regional Transportation Plan is available from SCAG under separate cover.

TABLE OF CONTENTS

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ACRONYMS

Plans and Programs

ADAP	Airport Development Aid Program
AQMP	Air Quality Maintenance Plan
CAAP	California Airport Aid Program
EIR	Environmental Impact Report
FARE	Uniform Financial Accounting and Reporting Elements
HOV	High-Occupancy Vehicle
LARTS	Los Angeles Regional Transportation Study
RTDP	Regional Transit Development Program
RTP	Regional Transportation Plan
TSM	Transportation System Management

Legislative / Administrative

AB-69	Established the state and regional transportation planning process, and mandates the preparation of a regional transportation plan.
AB-1246	Created county transportation commissions in Los Angeles, Orange, Riverside and San Bernardino Counties.
SB-325 (TDA)	California Transportation Development Act -- allocates portion of sales tax revenues to transit and streets and roads.
SB-821	Amended SB-325 to create a bicycle-pedestrian program.
SB-1687	Established funding for new (Article 4.5) community-level transit in Los Angeles and Orange Counties from SB-325 moneys.
SB-759	Amended SB-325 (TDS) program requiring performance audits and other provisions relative to funding limitations.
AB-402	Created California Transportation Commission and revised state and regional planning and programming procedures for transportation.

Technical Abbreviations

CBD	Central Business District
CO	Carbon Monoxide
LAX	Los Angeles International Airport
LOSSAN	Los Angeles - San Diego Corridor
MAP	Millions of airline passengers
NMHC	Non-methane hydrocarbon
NOx	Nitrous oxides
PRT	Personal Rapid Transit
RSA	Regional Statistical Area
VFR	Visual Flight Rules
VLF	Vehicle license fee
VMT	Vehicle miles traveled

introduction and summary

I INTRODUCTION

The Environmental Impact Report for the SCAG 1978 Regional Transportation Plan serves two major purposes. First, it meets the legal requirements as mandated by AB69 and the California Environmental Quality Act (CEQA). Second, it provides a framework for evaluating the potential environmental impacts of policies and actions contained in the RTP. To do this the State EIR Guidelines were used. In compliance with these Guidelines, the following topics were included in the EIR:

- o Description of the environmental setting.
- o Any significant environmental impacts of the proposed project.
- o Any significant environmental impacts which cannot be avoided if the proposal is implemented.
- o Mitigation measures proposed to minimize the significant impacts
- o Alternatives to the proposed action.
- o The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.
- o Any significant irreversible environmental changes which would be involved in the proposed action should it be implemented.
- o The growth-inducing impact of the proposed project.
- o Impacts found to be not significant.
- o The mitigation of wasteful, unnecessary, and inefficient uses of energy.
- o Organizations and persons consulted.

This report identifies the major 1978 RTP policies/actions and looks at their significant environmental impacts on a regional-systems level. Significant local impacts are also noted, but these will be defined in much greater detail in separate environmental analyses associated with each project's development and implementation. This regional EIR will not replace or void these more detailed project EIRs. Agencies implementing the RTP's recommendations are responsible for developing these reports.

II SUMMARY

The 1978 EIR is organized according to the State EIR Guidelines. The first section provides a regional environmental setting for the SCAG region. Because of the sheer magnitude of data available on describing a region of this size, this report provides only an introductory guide to the physical and socioeconomic characteristics which are applicable to the environmental review of the RTP.

Significant environmental impacts can be classified into three categories:

1. construction and expansion of transportation facilities

2. secondary development impacts caused by construction and/or expansion of transportation facilities

3. impacts caused by a continued overreliance on the automobile.

The EIR establishes a regional framework for the environmental impact analysis of the RTP. Presently, there is a great deal of this analysis taking place on a detailed project-level basis (e.g., I-105, Palmdale International Airport, the four-element Regional Transit Development Program, etc.). It is on the local project-level basis that significant adverse impacts should be identified and mitigated. This EIR is a system-level analysis of the policies and actions recommended in the RTP. For example, on the system level, adverse impacts noted for highway construction are offset by beneficial impacts associated with multi-modal and transit improvements. The environmental impact summary matrix is a guide to the general impacts associated with the RTP's major components.

The RTP will have minimal direct adverse impacts on the natural environment except for a few localized environments (i.e., Palmdale, Rt. 30, I-15, and Rt. 86 corridors, and the ports' expansion). These impacts are identified and mitigated in their respective project level environmental assessments.

Overall, the development of the four-element Regional Transit Development Program and the highway construction program will help support a strong regional economy while improving the social environment for the region's increasing population. There will also be benefits felt in the areas of air quality and energy in reduced emissions and fuel consumption.

Continued over-reliance on the automobile makes it harder to achieve emission and fuel reduction objectives contained in the RTP. Further, those without autos suffer mobility problems in a region oriented towards the auto. The RTP places emphasis on measures to reduce reliance on the auto while maintaining a high level of personal mobility.

The EIR contains a wide range of mitigating measures to reduce environmental impacts. These may be generalized as comprehensive environmental policies and action-specific recommendations.

The remainder of the EIR responds to the various other State EIR Guideline requirements.

environmental setting

III.

ENVIRONMENTAL SETTING

The SCAG region (Figure 1) is one of the largest substate planning areas in the United States, both in land size and population. Its magnitude is complemented with a wide diversity of physical and socio-economic characteristics. This section describes the regionally significant physical, socio-economic, and ecological factors considered in assessing the potential environmental effects of the 1978 RTP. The setting will be discussed under the following headings:

- o Natural Environment
- o Land Use and Urban Form
- o Economy
- o Social Environment
- o Air Quality
- o Energy

A significant amount of planning work has already been completed in defining the SCAG region's environmental setting. This work is contained in a number of regional and local reports completed within the past few years. Instead of restating the complete detailed setting included in these studies we are incorporating by reference specific relevant information. This will allow a more detailed EIR setting in the impact areas most related to transportation (e.g., air quality, energy, land use and urban form). And, at the same time, the length of the EIR will be minimized.

This environmental setting is intended to address only points of major significance. Additional detailed information can be found by referencing the reports and studies noted.

A. NATURAL ENVIRONMENT

Listed in this section are various aspects of the natural environment that have been documented in the reports noted below. Detailed information on these subjects can be found in the referenced chapters of these reports.

Southern California Association of Governments, Environmental Impact Assessments of Principal Transportation Alternatives - A Background Report (for the 1975 RTP), December 30, 1974.

Southern California Association of Governments, Conservation and Open Space Plan, April 7, 1977.

Daniel, Mann, Johnson and Mendenhall, Preliminary Draft, South Coast Planning Area Environmental Setting, March, 1978.


IMPERIAL COUNTY
SAN BERNARDINO COUNTY
KERN COUNTY
RIVERSIDE COUNTY
SAN DIEGO COUNTY
ORANGE COUNTY
LOS ANGELES COUNTY
VENTURA COUNTY
MAP F
REGIONAL PERSPECTIVE
EAST VIEW
COUNTY BOUNDARIES
COASTAL PLANNING/MOUNTAIN PLANNING AREAS
SOUTHWEST HILL & VALLEY PLANNING
DESERT and DESERT MOUNTAIN PLANNING AREAS
1975 URBAN and URBANIZING AREA
scag

figure 1

SUBJECT	REPORT	CHAPTER
Geomorphology and Geology	SCAG-'74	2
Soils	SCAG-'74	2
Climate	SCAG-'74	2
Hydrology and Water Quality	SCAG-'74	2
Vegetation and Wildlife	SCAG-'74	2
Natural Hazards	SCAG-'74	2
Noise	SCAG-'74	2
Visual Conditions	SCAG-'74	2
Geology and Soils	DMJM-'78	2
Subsurface Water Resources	DMJM-'78	3
Surface Water Resources	DMJM-'78	4
Marine Water Resources	DMJM-'78	5
Terrestrial Biology	DMJM-'78	7
Archaeological and Historical Resources	DMJM-'78	9
Selected Natural Resource Lands	SCAG-'77	P. 45
Mineral Resources	SCAG-'77	P. 48

The above-referenced information will provide the reader with a complete picture of the SCAG region's natural environment. From water resources, geology, soils and climate to vegetation, endangered species, critical habitats, earthquake faults and more, one can trace the impacts of the transportation system on these components of the natural environment. This assessment will be discussed in Chapters V and VI of this report.

B. LAND USE AND URBAN FORM

This section describes the SCAG region in terms of 1) land use; 2) land use infrastructure; and 3) population distribution and forecasts for future growth.

1. Land Use

The SCAG region covers some 24.5 million acres, of which about 2.0 million acres are urbanized (including settlements in the mountains and desert with populations over 2,500). However, most of the region is inhospitable to human habitation, its eastern two-thirds being mountains and desert. The one million acres of urban land are more significant in the competition for usable space than their small 4% of the total region would indicate. Urban areas now occupy more than half as much land as does agriculture (1.7 million acres). Figure 1 shows the distribution of urban land in the region.

The region has many business and activity centers, rather than a single dominant center. The regional office market has developed into approximately 13 clusters. The primary concentrations are Los Angeles CBD, Century City, and Wilshire Corridor. Secondary concentrations are Los Angeles Airport, Hollywood-Sunset, San Fernando Valley, Westwood, Beverly Hills, Pasadena, Riverside, San Bernardino, Long Beach, and Orange County.

Other local office nodes exist throughout the region. Offices will continue to be built in all clusters, although the relative number located in the Los Angeles Central Business District may decline.

The region's retail trade is dispersed. Over 75% of retail purchases are made in small shopping areas, neighborhood stores, and strip commercial developments. This pattern is expected to continue, with some increase in the proportion of activity concentrated in shopping centers and major retail clusters.

Industrial activity is also dispersed, although development tends to cluster around rail lines, major highways, the harbor areas, and major airports. Many research-and-development industries locate in high-amenity areas to attract skilled employees. Industrial/manufacturing concerns are likely to disperse even more, locating closer to their markets.

Table 1 shows the functional distribution of urban land use. In 1970 nearly 65% of the region's urban land was in residential use with an average density of 5.38 dwelling units per acre.

URBAN LAND-USE MIX AND DISTRIBUTION

APPROXIMATE ACRES (%)

COUNTY	RESIDENTIAL	%	COMMERCIAL	%	INDUSTRIAL	%	OTHER*	%	TOTAL URBAN
Imperial	5,800	41.3	2,190	15.6	4,680	33.3	1,390	9.8	14,060
Los Angeles	417,455	63.3	42,543	6.4	60,119	9.1	140,180	21.2	660,297
Orange	92,220	67.2	12,380	9.0	10,590	7.7	22,050	16.1	137,240
Riverside	36,913	57.4	4,307	6.7	3,831	6.0	19,249	29.9	64,300
San Bernardino	68,054	64.9	6,406	6.1	12,479	11.9	17,977	17.1	104,916
Ventura	31,940	68.0	3,770	8.0	3,850	8.2	7,390	15.8	46,950
REGIONAL TOTAL	652,382	63.5	71,596	7.0	95,549	9.3	208,236	20.2	1,027,763

*Includes streets, highways, public use facilities, and governmental facilities.
Source: SCAG-76 Growth Forecast Policy - January 1976.

Dwelling-unit density peaks in the older parts of Los Angeles County, and in the City of Los Angeles. New housing starts remain dominated by single-family units, although multi-family and mobile/prefab units are capturing an increasing portion of new home sales.

table 1

As shown in Table 2, single-family units were relatively dominant, especially in those counties where land prices are lower.

HOUSING MIX AND DISTRIBUTION

COUNTY	SINGLE FAMILY	%	MULTIPLE	%	TOTAL DWELLING UNITS
Imperial	18,326	79	4,876	21	23,206
Los Angeles	1,573,976	62	962,999	38	2,536,975
Orange	332,516	72	129,051	28	462,367
Riverside	140,914	72	54,336	28	195,250
San Bernardino	216,110	87	33,223	13	249,612
Ventura*	112,774	78	32,838	22	145,612
REGIONAL TOTAL	2,376,183	66	1,202,924	34	3,579,107

*Sources: Ventura County -- 1975 Special Census Population Bulletin.
All others -- U.S. Census of Housing, 1970.

Open space in the region is classified as: permanent open space, military reservations, agricultural land, extractive areas, Bureau of Land Management holdings, water, vacant land, and recreational land. Permanent open space includes lands owned by the public, such as national forests and regional parks.

2. Infrastructure

Certain public investments (especially those that extend or expand the region's utility infrastructure) influence urban growth and development.

Transportation facilities represent a significant public investment. Intra-regional travel is primarily by ground modes, with automobiles and trucks the chief conveyors of both people and goods.

The inter-regional movement of people and goods is by water, air, rail, and highway modes. A few key terminals serve to connect two or more modes, or one major route or carrier with another. However, many terminals are dispersed and uncoordinated, reducing transshipment efficiency.

table 2

During the region's early development, the water supply largely controlled urban land use. However, the importation of water (from the Owens Valley, Colorado River, California Water Project) shifted control to the distribution of water. Adequacy of waste-water systems can also affect new growth. As in the case of water, the distribution of natural gas and electricity can impact the direction and pace of urban development. Solid-waste disposal facilities have had little impact on new development.

3. Future Growth

In 1975, the total regional population was 10,355,100; 85% of this number lived in Los Angeles and Orange Counties. Most lived south of the San Gabriel Mountains and west of the Chino Hills. The remainder lived primarily in the Ventura-Oxnard or the San Bernardino/Riverside areas. Southern California led the nation in attracting new residents during the 1950s and early 1960s, but migrations into and out of the region are now about equal.

The region's population is concentrated in the coastline counties, which attracted 86% of the region's growth between 1950 and 1975. Since 1960, however, large numbers of people are moving from large metropolitan counties to outlying counties. Central cities are losing population at increasing rates, not only in Los Angeles County but also in the adjacent areas. The population density in urbanized areas (Figure 2) ranges from fewer than 2,300 persons per square mile (in mountain and desert areas) to 16,512 in RSA 23 (downtown Los Angeles).

Due to recent trends and evolving government policies, the SCAG D/E growth forecast (12.7 million residents in 1990) was revised downward in December, 1975, to 12.25 million (SCAG '76). Many of the counties are expected to revise previous projections. Population trends and projections for the SCAG region are shown in Tables 3 and 4.

Approximately every two years, SCAG has produced a growth forecast policy which expresses local and regional policies through the use of explicit PHEL forecasts (Population, Housing, Employment and Land use). SCAG '76 will be updated during 1978 for use in the 1979 RTP update. County and regional statistical area (RSA) population totals will be developed under 6 PHEL alternatives and based on an assessment of these alternatives the SCAG-78 Forecast will be developed and used as the adopted SCAG growth policy. These forecasts form the basis for the water (208), air (AQMP) and transportation (RTP) plans produced by SCAG.

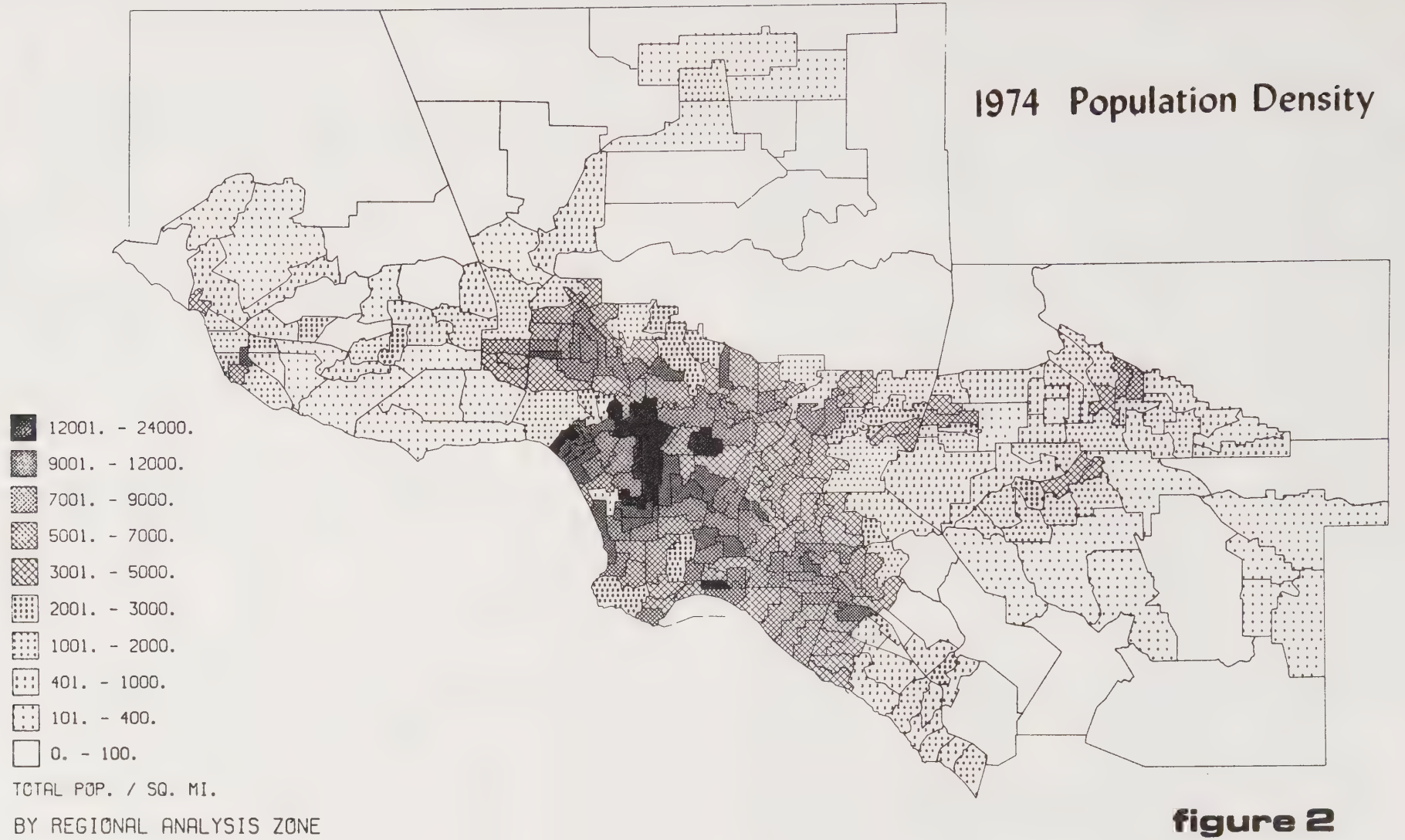

1974 Population Density
12001. - 24000.
9001. - 12000.
7001. - 9000.
5001. - 7000.
3001. - 5000.
2001. - 3000.
1001. - 2000.
401. - 1000.
101. - 400.
0. - 100.
TOTAL POP. / SQ. MI.
BY REGIONAL ANALYSIS ZONE

figure 2

POPULATION TRENDS IN THE SCAG REGION

1910-1970

COUNTY	1910	1920	1930	1940	1950	1960	1970
Imperial	13,591 (2.0%)	43,453 (3.6%)	60,903 (2.3%)	50,740 (1.5%)	62,975 (1.3%)	72,105 (.9%)	74,492 (.7%)
Los Angeles	504,131 (76.2%)	936,455 (78.4%)	2,208,492 (83.1%)	2,785,643 (84.3%)	4,151,687 (83.1%)	6,040,805 (77.2%)	7,038,764 (70.0%)
Orange	34,436 (5.2%)	61,375 (5.1%)	118,674 (4.5%)	130,760 (4.0%)	216,224 (4.6%)	703,925 (9.0%)	1,420,386 (14.1%)
Riverside	34,696 (5.2%)	50,297 (4.2%)	81,024 (3.0%)	105,542 (3.2%)	170,046 (3.4%)	306,191 (3.9%)	459,074 (4.6%)
San Bernardino	56,706 (8.6%)	73,401 (6.1%)	133,900 (5.0%)	161,108 (4.9%)	281,642 (5.6%)	503,591 (6.4%)	682,233 (6.8%)
Ventura	18,347 (2.6%)	28,724 (2.4%)	54,976 (2.1%)	69,685 (2.1%)	114,647 (2.3%)	199,138 (2.6%)	378,497 (3.8%)
REGIONAL TOTAL	661,907 (100.0%)	1,193,705 (100.0%)	2,657,969 (100.0%)	3,330,478 (100.0%)	4,997.221 (100.0%)	7,825,755 (100.0%)	10,053,446 (100.0%)

Source: U.S. Bureau of Census Figures

POPULATION PROJECTIONS FOR THE SCAG REGION

1975-2000

COUNTY	1975	1980	1990	2000
Imperial	83,250 (.8%)	90,000 (.8%)	102,000 (.8%)	116,000 (.9%)
Los Angeles	7,020,772 (67.2%)	7,176,900 (64.7%)	7,557,000 (61.7%)	7,905,000 (59.5%)
Orange	1,684,500 (16.1%)	1,962,000 (17.7%)	2,369,000 (19.3%)	2,656,000 (20.0%)
Riverside	531,679 (5.1%)	601,100 (5.4%)	728,000 (5.9%)	866,000 (6.5%)
San Bernardino	696,064 (6.7%)	753,200 (6.8%)	867,000 (7.1%)	960,000 (7.2%)
Ventura	432,407 (4.1%)	503,000 (4.5%)	632,000 (5.2%)	792,000 (6.0%)
REGIONAL TOTAL	10,448,672 (100.0%)	11,086,200 (100.0%)	12,255,000 (100.0%)	13,295,000 (100.0%)

Source: SCAG-76 Growth Forecast Policy (January, 1976)

table 3
table 4

C. REGIONAL ECONOMY

The SCAG region has a diverse and active economy. More than half of the population of the western United States lives in California and of these, roughly half or 10.6 million live in the SCAG region. The regional economy is second only to New York in the value of its gross economic output and number of businesses.

Historically, the regional economy was based on agriculture, oil extraction, aerospace and aviation, and tourism/recreation. These sectors are still important segments of the regional economy. However, the past decade has seen broad diversification into manufacturing sectors such as apparel and other textile products, rubber and plastics, and furniture and fixtures.

The region developed more rapidly and more recently than other sections of the country. A continuous stream of in-migration since World War II produced an average annual population growth rate three and one half times that of the nation as a whole. The economic base and society as a whole is less traditional, with greater emphasis placed on the new, innovative, and highly technological.

The Gross State Product of California represents approximately 11% of the U.S. Gross National Product. The SCAG region is estimated to contribute 60% of the state's total. If it were a separate nation, the SCAG region's gross output would be the twelfth largest in the world, ahead of Australia, Spain, and the Netherlands.

The SCAG region is also well balanced in terms of industry mix. Its large size and diversity makes its behavior similar to that of the U.S. economy as a whole, and subject to influence by the same factors. Despite this overall similarity, however, important variations exist in the region's industry mix which differentiate it from both the rest of California and the nation. The primary structural features distinguishing the SCAG regional economy from that of California are (in terms of percent of total employment - 1970 Federal Census):

- its lesser dependence upon agriculture (1.7% vs. 3.1%)
- its greater dependence upon manufacturing (26.1% vs. 21.6%) particularly in the durable goods categories such as aerospace; and
- its lesser dependence upon government (public administration) and education (elementary and secondary schools and colleges) -- 12.1% vs. 13.2%.

The region has an economic impact on the country and the world. The gross output of the region was estimated by major industrial sector (Table 5) at a total output of $61 billion (in 1967 dollars).

The SCAG region accounts for 63% of California's manufacturing employment and over 5.4% of the nation's. Aerospace and related industries dominate the manufacturing sector, although their share has been slowly declining since 1965.

1972 GROSS OUTPUT BY MAJOR INDUSTRIAL SECTION

(MILLIONS OF 1967 DOLLARS)

SECTOR	SCAG REGION	COUNTY					
		IMPERIAL	LOS ANGELES	ORANGE	RIVERSIDE	SAN BERNARDINO	VENTURA
Agriculture, Forestry Fisheries	214.0	16.9	129.8	26.6	19.1	5.5	16.1
Mining	465.7	--	293.6	55.9	19.1	45.1	52.0
Contract Construction	3,948.1	12.8	2,947.2	568.6	196.3	210.2	12.0
Manufacturing	21,936.9	28.5	17,755.5	2,869.2	397.5	646.6	239.6
Transportation, Communications & Utilities	5,046.5	17.8	4,352.4	313.8	113.7	165.5	83.3
Retail Trade	8,259.7	58.3	6,017.6	1,164.0	354.3	436.0	229.5
Wholesale Trade	5,250.3	25.3	4,629.2	318.9	99.1	121.9	55.9
Finance, Insurance and Real Estate	4,301.0	10.8	3,554.8	450.8	114.0	114.0	56.6
Services	10,951.1	25.2	8,983.2	1,039.4	318.2	426.1	159.0
Other	295.3	1.4	228.0	43.0	8.5	9.2	5.2
ALL SECTORS	60,668.6	197.0	48,891.3	6,851.2	1,639.8	2,180.1	909.2

Source: SCAG Estimates for 1972.

Employment is most concentrated in the central Los Angeles County area, and gradually declines outward from there, with significant employment nodes such as Irvine and Warner Center serving as smaller regional economic activity centers. In general, the employment distribution is similar to the population distribution of the region. The single greatest employment concentration is in the CBD - Wilshire corridor, although it contains less than 20% of the region's jobs. Table 6 shows the distribution of jobs by major sector and county:

table 5

1975 AVERAGE EMPLOYMENT

(THOUSANDS)

SECTOR	SCAG REGION	COUNTY				
		IMPERIAL	L. A.	ORANGE	RIVERSIDE SAN BDO.	VENTURA
Manufacturing	994.7	1.8	774.6	151.1	51.1	16.1
Construction	51.45	.65	11.0	23.3	12.4	4.1
Transportation/Communications/Utilities	216.85	1.35	174.9	17.6	18.6	4.4
Wholesale Trade	264.2	2.2	218.7	25.4	13.0	4.9
Retail Trade	689.7	5.3	478.2	117.7	67.9	20.6
Fire	232.7	.6	184.5	31.3	12.1	4.2
Services	837.0	3.0	633.7	111.0	68.7	20.6
Government	699.15	7.95	475.2	92.1	88.2	35.7
Mining	102.4	---	96.1	2.2	2.4	1.7
Agriculture	61.7	8.7	9.1	8.0	21.1	14.8
ALL SECTORS	4,625.05	31.55	3,056.0	579.7	355.5	127.1

Source: California Improvement Development Division "Area Manpower Reviews"

table 6

The personal income in the SCAG region was $68.9 billion in 1975, nearly half of the state's total personal income. This represents a 50% increase since 1970 for personal income in the region compared to a 55% increase for California as a whole. Table 7 shows the per capita personal income by county with a comparison data for California and the United States.

PER CAPITA PERSONAL INCOME, 1960-1974
SCAG Region, California, & United States
(Constant 1974 Dollars)

COUNTY	YEAR			
	1960	1965	1970	1974
Los Angeles	$ 5268	$ 5829	$ 6667	$ 7284
Orange	6389	6010	7093	7160
San Bernardino	4053	4278	5069	5578
Riverside	4279	4473	5541	5654
Ventura	5362	4802	5728	5925
Imperial	4613	5140	6350	7333
SCAG Region	5248	5651	6530	7012
California	4936	5506	6282	6779
U.S.A.	4048	4751	5497	5938

Source: California State Department of Finance (The Natelson Company, Inc.)

table 7

Unemployment by county is identified in Table 8. Imperial County is the hardest hit area with a 21.1% unemployment average. The remainder of the counties are close to the statewide average of 8.2% (e.g., range of 8.0 to 8.6). The only exception is Orange County, which had the lowest rate at 5.9%. Overall, this marks significant improvement from the 1975 figures which listed a statewide average of 9.9% and a rangef 7.6% to 14.3% for the SCAG region counties.

Civilian Employment and Unemployment
1977 Annual Average

County	1977 Civilian Labor Force	Employment	Unemployment Number	Unemployment Percent
Imperial	42,350	33,400	8,950	21.2
Los Angeles	3,353,600	3,086,400	267,200	8.0
Orange	915,200	860,800	54,400	5.9
Riverside	205,875	189,250	16,625	8.1
San Bernardino	304,725	278,425	26,300	8.6
Ventura	194,800	179,200	15,600	8.0
Region	5,016,550	4,627,475	389,075	7.8
California	10,139,600	9,305,300	834,300	8.2

Source: State of California Employment Development Department Report 400

While the unemployment has decreased for most counties, the civilian labor force and employment had increased. Over 300,000 people have joined the regional civilian labor force in the last two years. Minorities have been especially hard hit by the gap between jobs and labor force, with unemployment rates exceeding the county averages in most cases by over 50%. Areas of note include much higher than average unemployment for Blacks in Los Angeles County, and Mexican-Americans in Imperial County, Ventura County and the San Bernardino-Riverside SMSA.

table 8

The automotive industry has been singled out in this section for special attention because a major emphasis in the 1978 Regional Transportation Plan has been to reduce the dependence of Southern California on the automobile. This section will outline the general structure of the automotive industry in the SCAG region to provide a beginning understanding of possible RTP impacts on the industry.

The SCAG region is the nation's largest automobile market. According to research recently conducted by the Los Angeles Times, Los Angeles and Orange Counties alone accounted for $4.4 billion in automotive dealer and store sales in 1974, exceeding the nation's second largest automotive market (the Chicago area) by over one billion dollars. There are more cars registered in Los Angeles and Orange Counties than in 44 individual states--4.7 million in 1975. The region contains one of the most extensive freeway systems in the world. Needless to say, Southern California residents are extremely dependent on the automobile, as is the automotive industry extensively dependent on the Southern California market.

The automotive industry in Southern California consists of vehicle suppliers (manufactuers and importers), parts and accessory suppliers (manufacturers and importers), wholesalers and retailers of vehicles and equipment, and service outlets.

While Southern California is heavily dependent on the automobile for transportation, it is not extensively dependent on the automotive industry for employment. Total employment in automotive and automotive-related industries has remained at a very steady 5.3% to 5.5% of total employment in the SCAG region for the past five years. (See Table 9.) Automotive establishments represented roughly 9% of all businesses recorded by the Department of Commerce during the same period.

Inflation has played a major role in weakening the region's economy, especially in the past five years. The combined real value of the assessed valuation of property in the SCAG region (less Imperial County) was $1.8 billion lower in 1974 than it had been in 1970 (in constant 1975 dollars). This has had, and will continue to have, a major impact on the ability of local government to deliver services. Table 10 shows the five-year changes in assessed values.

THE AUTOMOTIVE INDUSTRY [a]
S.C.A.G. Region

AUTOMOTIVE EMPLOYEES AS A PERCENT OF TOTAL EMPLOYMENT

	1973	1972	1971	1970	1969
Ventura Co.	6.5%	6.3%	6.2%	6.7%	6.8%
Los Angeles Co.	5.2	5.3	5.4	5.1	5.2
San Bernardino Co.	6.6	6.3	6.6	6.4	6.5
Orange Co.	5.1	5.2	5.0	4.9	4.9
Riverside Co.	7.1	7.2	6.9	6.8	6.8
Imperial Co.	9.4	9.0	8.8	9.9	8.1
SCAG Region	5.4%	5.4%	5.5%	5.3%	5.3%

AUTOMOTIVE ESTABLISHMENTS AS A PERCENT OF ALL ESTABLISHMENTS

	1973	1972	1971	1970	1969
Ventura Co.	10.7%	10.7%	11.0%	11.0%	10.7%
Los Angeles Co.	8.1	8.4	8.4	8.3	8.4
San Bernardino Co.	12.2	12.6	12.6	12.7	12.3
Orange Co.	9.5	10.2	10.2	10.1	10.4
Riverside Co.	11.2	11.5	11.2	11.2	11.0
Imperial Co.	10.3	10.1	9.5	10.4	9.4
SCAG Region	8.7%	9.1%	9.1%	9.0%	9.0%

[a] Includes Manufacturers (SIC 301 & 371); Wholesalers (SIC 501); Retailers (SIC 55); and Service Establishments (SIC 75).

[b] As of mid-March of each year reported.

Source: County Business Patterns
U.S. Department of Commerce

COUNTY-ASSESSED VALUES

(BILLIONS OF 1975 DOLLARS)

	1970	1971	1972	1973	1974	1975	Percentage + or - 1970-1975
Los Angeles (Assessed)	18.6	20.3	20.9	21.9	22.6	24.0	-10%
(Real $ 1975)	26.6	27.8	27.6	27.3	25.3	24.0	
Orange (Assessed)	3.9	4.2	4.4	5.0	5.5	6.4	+14%
(Real $ 1975)	5.6	5.8	5.8	6.3	6.2	6.4	
Riverside (Assessed)	1.2	1.3	1.4	1.5	1.6	1.8	-6%
(Real $ 1975)	1.7	1.8	1.8	1.9	1.9	1.8	
San Bernardino (Assessed)	1.6	1.7	1.9	2.0	2.1	2.3	0%
(Real $ 1975)	2.3	2.3	2.5	2.5	2.4	2.3	
Ventura (Assessed)	1.1	1.2	1.2	1.3	1.4	1.5	0%
(Real $ 1975)	1.5	1.6	1.6	1.6	1.6	1.5	
Total (Assessed)	26.4	28.7	29.8	31.7	33.2	36.0	-5%
(Real $ 1975)	37.8	39.3	39.3	39.6	37.2	36.0	

Source: SCAG Urban Reinvestment Study Draft, October 1976

table 9
table 10

Table 11 shows that the SCAG region had over $40 billion in taxable sales in 1976. This represents more than an 11% annual increase over the total for 1975. Further, the rate of annual increase is growing (i.e., for the two year period 1973-1975, the total rate of increase was about 15%).

TAXABLE SALES
(THOUSANDS OF DOLLARS)

	1973	1975	1976
Imperial County	$ 234,208	$ 313,928	$ 344,764
Los Angeles County	21,220,440	24,662,098	27,415,161
Orange County	4,701,633	5,751,433	6,965,894
Riverside County	1,274,508	1,502,113	T,775,716
San Bernardino County	1,686,423	1,977,173	2,343,336
Ventura County	903,106	1,143,809	1,318,829
Regional Total	$30,020,318	$35,350,554	$40,163,700

Source: California Statistical Abstracts.

SCAG REGION ESTIMATED TOTAL RETAIL SALES 1976
($000's)

COUNTY	TOTAL RETAIL SALES	PERCENTAGE OF REGION
Los Angeles	$31,163,639	67.7
Orange	7,994,248	17.4
San Bernardino	2,704,008	5.9
Riverside	2,119,390	4.6
Ventura	1,602,482	3.5
Imperial	406,720	0.9
Total Region	$45,990,487	100.0

Source: California State Department of Equalization

Table 12 provides the estimated total retail sales for the SCAG region during 19?6. Much of the retail sales occur in the more than seventy shopping centers and the numerous central business districts (CBDs) which retain their economic vitality.

table 11
table 12

D. SOCIAL ENVIRONMENT

The overall diversity of the region is reflected in the social and cultural characteristics of its population, institutions, and artifacts.

The regional mix of racial/ethnic groups is shown in Table 13. In 1970, the population was composed of 8.9 million Anglo and Spanish-American (89%), 0.8 million Blacks (8.3%), and 0.3 million persons of other races (2.7%), primarily Asian and Native American. The region's Spanish-American population totalled 1.7 million (17.4%).

POPULATION BY RACIAL/ETHNIC GROUPS

	ANGLO AND SPANISH-AMERICAN*	BLACK*	SPANISH-AMERICAN*	OTHER*	TOTAL**
Imperial	68,806 (92.9)	2,586 (3.5)	34,260 (46)	3,100 (4.2)	83,300 (.90
Los Angeles	6,030,031 (85.7)	762,925 (10.8)	1,289,311 (18.3)	243,507 (3.5)	6,929,600 (66.9)
Orange	1,385,131 (97.5)	10,236 (0.70)	160,168 (11.3)	29,020 (1.3)	1,684,500 (16.3)
Riverside	430,680 (93.8)	21,150 (4.6)	79,621 (17.3)	7,244 (1.6)	518,500 (5.0)
San Bernardino	643,300 (94.5)	28,883 (4.2)	109,262 (16)	9,900 (1.3)	706,800 (6.8
Ventura	362,164 (96.2)	6,466 (1.70)	73,694 (19.6)	7,300 (2.1)	432,400 (4.2)
REGIONAL TOTAL	8,920,112 (88)	832,245 (8.3)	1,746,306 (17.4)	292,560 (2.7)	10,255,100 (100)

*1970 Census. **Department of Finance, Population Estimate January 1, 1975

Education and median income levels show a correlation. In 1970, Orange County ranked highest in both categories (15.0% college graduates, 70.5% high school graduates, and $12,200 median income), while Imperial County ranked lowest (7.3% college graduates, 43.1% high school graduates, and $8,200 median income). Incomes and educational levels are the highest, in the western, coastal counties of the region. In the region as a whole, whites had a median family income of $10,300 in 1969, compared to $6,900 for Blacks, $8,300 for Spanish-Americans, and $9,200 for families of other races. Of the regional population over 25 years of age, 62.5% were high school graduates, 37.5% were not.

table 13

The residential character of the SCAG region is largely one of single-family dwellings, although multi-family housing starts are increasing. There were some 2.4 million single-family units, 1.2 million multi-family units, and 81,000 mobile houses as of April 1, 1970. Of the nearly 4 million housing units, 3.6 million were occupied. Just over 52% of the units were owner-occupied, the remainder being rented. (See Table 14). Homeowners are predominantly white, whereas the minority population (Blacks, Spanish-American) are predominantly tenants.

1975 Percentage of Owner-Occupied Housing
SCAG Six-County Region

County	Owner Occupied
Los Angeles	46%
Orange	64%
Riverside	60%
San Bernardino	63%
Ventura	63%
Imperial	60%
TOTAL	52%

Source: SCAG Regional Housng Allocation Model, 1977

Overall condition of the housing stock is good, the majority of the dwelling units having been constructed after 1950. It is estimated, however, that 500,000 SCAG area residents live in substandard units (overcrowded or lacking plumbing facilities). This group is composed primarily of poor, elderly, and minorities. Discrimination continues to hinder certain groups from acquiring the type and/or location of housing desired.

The social character of the region is molded by its degree of access and mobility. Access is a characteristic of the transportation system, and describes, for example, where the system goes, when it operates, and the travel time required to reach any area served. Mobility is a user characteristic, and concerns the ability of the user to take advantage of available transportation services. For example, many people who are handicapped or disabled are denied mobility because of "barriers" in vehicle design.

The region's current transportation system (the network of local streets, arterials, freeways and expressways) provides fast, unimpeded traffic flow during the off-peak hours for those with automobiles. During peak hours, however, some locations become congested. Transit Service is confined to the metropolitan areas and current levels of service are low in some portions of this area.

table 14

For those with the mobility to take advantage of the high degree of accessibility afforded by the region's streets and roads, there follows an increase in socio-economic mobility. As the effective range of system utilization expands, the user has an expanded range of job opportunities, housing locations, leisure activities, etc. Those excluded from using the system are disadvantaged by comparison.

A major issue in the social environment is the numbers and locations of transit dependents. Los Angeles County has the greatest numbers and percentages of transit dependent households. Table 15 shows those persons under 18 and over 64 years old, the numbers of needy households as defined by the 1977 SCAG Regional Housing Allocation Model, and the number of households without autos. These different categories are, in many cases, overlapping.

Selected Transit Dependency Characteristics
SCAG Region

County	Under 18	Over 64	Needy Households	Households Without Autos	
Imperial	31,258	6,772	4,930	2,259	9
Los Angeles	2,023,440	684,442	419,451	317,033	12.4%
Orange	539,869	127,196	95,354	39,716	6.7%
Riverside	160,591	76,597	35,265	18,844	9.7%
San Bernardino	228,191	68,778	44,908	23,852	9.9%
Ventura	159,385	31,036	23,286	10,614	7.6%
Region	3,142,734	994,821	623,158	412,318	-

Sources:

1. Population Projections for California Counties 1975-2020, Report 77-P-3 California Department of Finance Dec. 1977, Estimate for July 1975.
2. Households defined in the 1977 SCAG Regional Housing Allocation Model (Adopted April 7, 1977) as needing financial assistance for housing.
3. 1976 LARTS Model Run based on 1976 Urban and Rural Travel survey. Imperial County was assumed to have 9% households without autos.

table 15

E. AIR QUALITY

The goal of improving air quality in the SCAG region is a growing critical issue. At present, air pollution is a part of all of our lives. To protect public health and welfare, federal and state legislation has mandated air quality standards. Under the Federal. Clean Air Act Amendments of 1977, national air quality standards must be attained by 1982 with a possible extention to 1987 for certain pollutants. State law (AB 250: Lewis Air Quality Management Act) indicates state standards to be attained in the South Coast Air Basin at the earliest date possible. State and federal ambient air quality standards are shown in Table 16.

The cost of air pollution is high in Southern California. Estimates of damage to personal health, crops and materials range as high as $5 billion in 1970 ($1,400 per household). In addition, residents are warned not to walk or exercise when the pollution level is high. Sports activities are often cancelled in schools because of "smog alerts." Air pollution can be particularly harmful to persons with emphysema, asthma and similar conditions. Even moderate amounts of pollution can cause headaches, rasping coughs and burning eyes. Carbon monoxide, one of three major air pollutants emitted from vehicles, can cause heart problems, dizziness and fatigue, and impair various central nervous system functions.

Air pollutants are either primary or secondary. Primary pollutants are those emitted directly from physical sources and include hydrocarbons, carbon monoxide, oxides of nitrogen, sulphur oxides, and total suspended particulates. The primary sources for these emissions are the automobile, railroad, aircraft, and stationary sources. Gasoline exhaust from the automobile is the largest single source of hydrocarbons, nitrogen oxides and carbon monoxide. Over 90% of these pollutants in the region occur in the South Coast Air Basin. Table 17 shows the distribution of emissions from all sources by county in tons per day. Secondary pollutants, oxidants and some particulate matter result from chemical reactions after primary pollutants are emitted into the air. The most severe air pollution problem regionwide is photochemical oxidant. To help further define emissions for the existing transportation system, Figure 3 lists the percentage of on-road motor vehicle emissions by source category (i.e., cars, trucks, motorcycles, other) in tons per day. In addition, Figure 4 defines the total amount of emissions from all sources, thus indicating the relative proportion that the transportation system contributes to the air pollution problem.

Ambient air conditions within the region are measured at 33 monitoring stations, and provide the base data for analysis and forecasts of air quality. It is apparent that oxidants are the worst problem in the SCAG region, and the maximum oxidant concentrations in the Southeast Desert AQMA are downwind from the South Coast AQMA. An additional indicator of existing air quality is the number of days per year by geographic area during which the air quality standards are exceeded (Figures 6 to 12). Again note that the most serious oxidant problem (secondary pollutant) lies downwind of the most serious primary pollutant problem; this illustrates the time dependency of the photochemical process. Photochemical

AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards Concentration	State Compliance Date	National Primary Standards	National Secondary Standards	Federal Compliance Date**	AQMP Legal Minimum**
Oxidant (Ozone)	1 hour	0.10 ppm (200 ug/m^3)	12/31/87	160 ug/m^3 (0.08 ppm)	Same as Primary Standards	12/31/87***	12/31/87
Carbon Monoxide	12 hour	10 ppm (11mg/m^3)	Earliest Date Achievable (EDA)	-			Earliest Date Achievable (EDA)
	8 hour	-		10 mg/m^3 (9 ppm)	Same as Primary Standards	12/31/87***	12/31/87
	1 hour	40 ppm (46 mg/m^3)	12/31/87	40 mg/m^3 (35 ppm)		12/31/87***	12/31/87
Nitrogen Dioxide	Annual Average	-		100 ug/m^3 (0.05 ppm)	Same as Primary Standards	12/31/82	12/31/87
	1 hour	0.25 ppm (470) ug/m^3	EDA	-	Same as Primary Standards		EDA
Sulfur Dioxide	Annual Average	-		80 ug/m^3 (0.03 ppm)			12/31/87
	24 hour	0.05 ppm*	EDA	365 ug/m^3 (0.14 ppm)			'82 (Fed.) EDA (Calif.
	3 hour			-	1,300 ug/m^3 (0.5 ppm)		
	1 hour	0.5 ppm (1310 ug/m^3)	EDA	-			
Suspended Particulate Matter	Annual Geometric Mean	60 ug/m^3	EDA	75 ug/m^3	60 ug/m^3		
	24 hour	100 ug/m^3	EDA	260 ug/m^3	150 ug/m^3		'82 (Fed.) EDA (Calif.
Sulfates	24 hour	25 ug/m^3	EDA	-			EDA
Lead	30 Day Av.	1.5 ug/m^3	EDA	-			EDA
Hydrogen Sulfide	1 hour	0.03 ppm (42 ug/m^3)	EDA	-			EDA
Hydrocarbons (Corrected for Methane)	3 hour (6-9 a.m.)	-		160 ug/m^3 (0.24 ppm)	Same as Primary Standards		'82
Ethylene	8 hour	0.1 ppm	EDA	-			EDA
	1 hour	0.5 ppm	EDA	-			EDA
Visibility Reducing Particles	1 observation	In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%.	EDA	-			EDA

*This standard is only considered violated when either the State 24 hour particulate matter and/or the one hour oxidant standard is violated.

**Only applicable to Primary Standards.

***This assumes that non-attainment by 1982 can be adequately demonstrated, pursuant to section 172(a) of the Clean Air Act Amendments of 1977.

table 16

DISTRIBUTION OF POLLUTANT EMISSIONS
1974

Area	Total Organic Gases	Reactive Organic Gases	Nitrogen Oxides	Sulfur Dioxides	Carbon Monoxide	Particulates
South Coast Air Basin						
Tons/Day	1,942	1,726	1,386	417	8,642	241
Percentage	100	100	100	100	100	100
Los Angeles County						
Tons/Day	1,435	1,271	978	298	5,716	153
Percentage	74	74	70	72	66	63
Orange County						
Tons/Day	297	268	217	50	1,555	35
Percentage	15	15	16	12	18	15
Riverside County						
Tons/Day	94	84	66	6	489	23
Percentage	5	5	5	1	6	10
San Bernardino County						
Tons/Day	116	103	125	63	882	30
Percentage	6	6	9	15	10	12

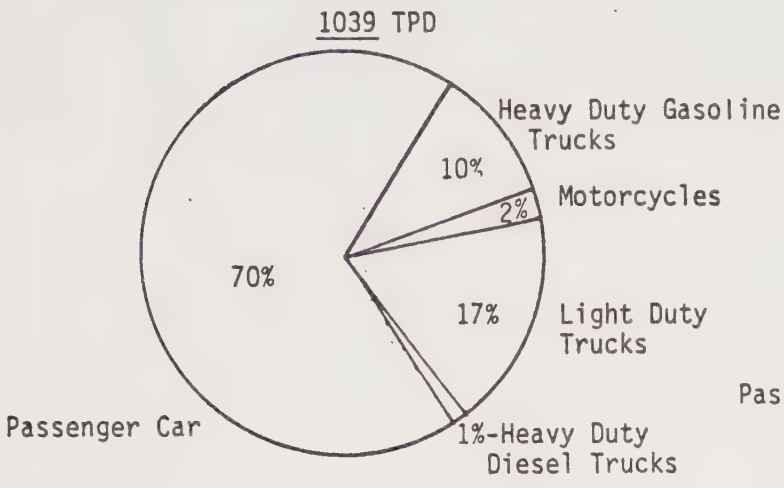
SOURCE: Southern California Association of Governments Air Quality Management Planning Program (AQMP). Description of Existing Air Quality in the South Coast Area. 208-20a, b, October 1977.

table 17

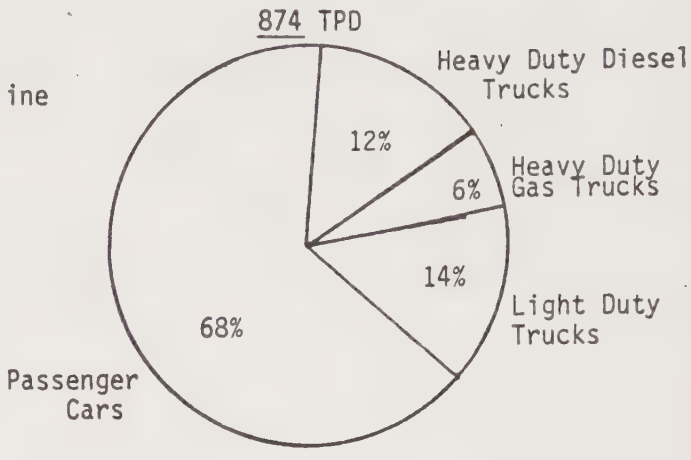
SOUTH COAST AIR BASIN - 1974

PERCENTAGE OF ON-ROAD MOTOR VEHICLE EMISSIONS BY SOURCE CATEGORY

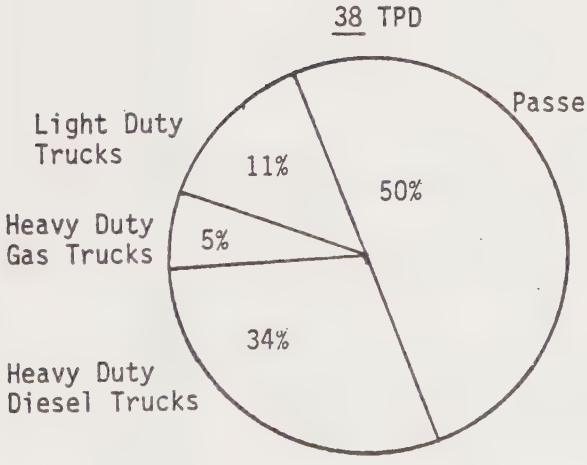
REACTIVE ORGANIC GASES *



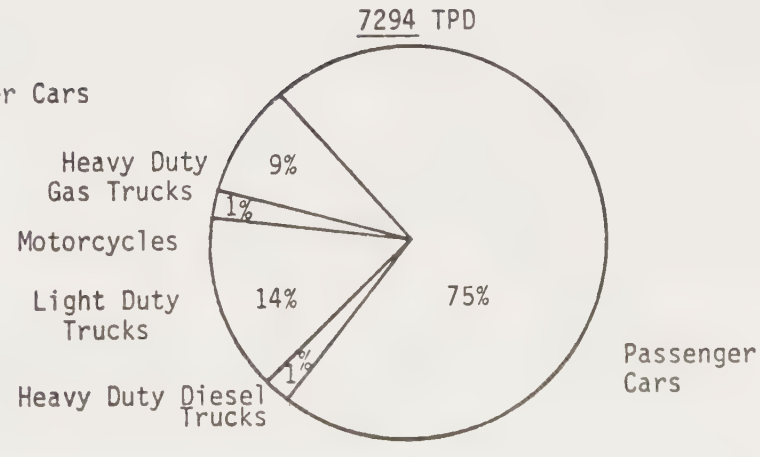
NITROGEN OXIDES



SULFUR DIOXIDE



CARBON MONOXIDE



* PERCENTAGES SAME FOR TOTAL ORGANIC GASES

figure 3

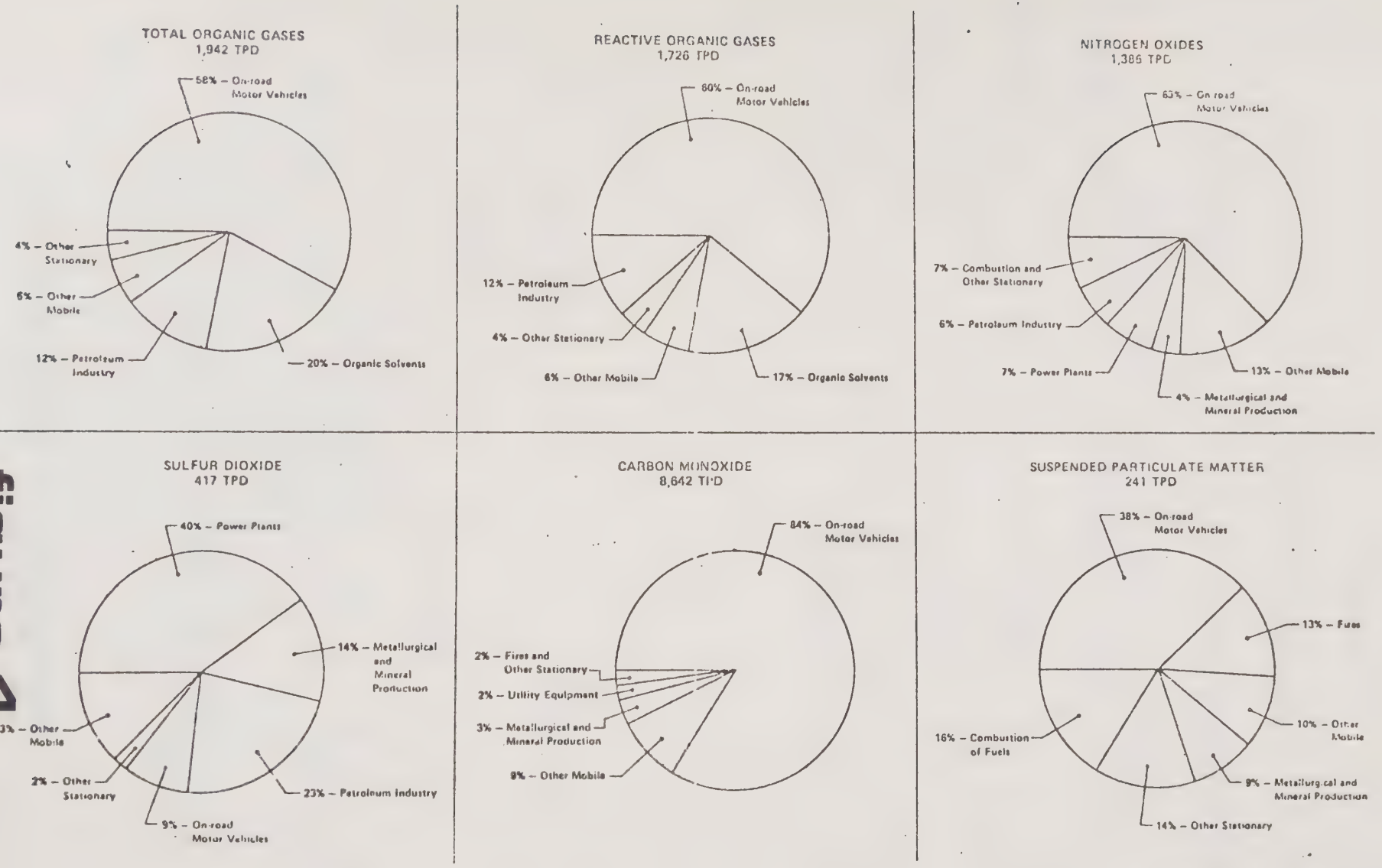


figure 4

SOUTH COAST AIR BASIN
PERCENTAGE OF EMISSIONS BY SOURCE CATEGORY – 1974

NOTE: TPD: TONS PER DAY
SOURCE: SCAG AIR QUALITY MANAGEMENT PLANNING PROGRAM (AQMP) DESCRIPTION OF EXISTING AIR QUALITY IN THE SOUTH COAST AREA 208-20a, b Oct. 1977

smog became a severe problem here during the Second World War. The smog problem in the Los Angeles basin preceded that in the rest of the country because of three factors:

1. Limited ability of our atmosphere to disperse the area's air pollution because of persistent low inversions and sluggish wind flow;

2. Abundant sunshine for initiating and energizing photochemical reactions;

3. The sharp rise in industry and in the number of motor vehicles.

Although air pollution levels have been significantly reduced since their high in 1965, federal and state standards for oxidants are still violated about two-thirds of the year, and the standards for carbon monoxide are violated one-third of the year. In 1976, federal standards were violated 252 days in this area. Virtually every day at least one air quality standard is violated in the South Coast Air Basin. (See Table 18 for a summary of the violations of the standards during 1976). Clearly, much more needs to be done to reduce violations to the required national standard of one violation per year.

Because of stricter exhaust standards, vehicles of the future will release significantly fewer hydrocarbons, carbon monoxide and nitrogen oxides (major transportation-related air pollutants). Estimates by the State Air Resources Board show emissions dropping every year until sometime after 1990, when the increased number of miles of travel will begin to cause a rise in pollution levels.

Air quality management planning in the SCAG region is done in a complicated and overlapping jurisdictional framework. The region is encompassed by all or portions of three state-designated air basins -- the South Central Coast, South Coast, and South East Desert, and by two Air Quality Maintenance Areas (AQMA)--the South Coast AQMA and the South East Desert AQMA. (Figure 5 shows these areas.) The Lewis Air Quality Act created the South Coast Air Quality Management District, covering all or portions of Los Angeles, Orange, San Bernardino and Riverside Counties. This District, together with the APCDs from Ventura and Imperial Counties is responsible for preparing and adopting an Air Quality Management Plan for the AQMA for each basin by 1979. The South Coast AQMA is the most seriously impacted portion of the region, and contains approximately 96% of the region's population.

Within the next month, updated figures will be developed for the emissions inventory for all sources. When this information is available, this air quality setting will be amended to show the most accurate data.

VIOLATIONS OF FEDERAL OR STATE AIR QUALITY STANDARDS

IN THE SOUTH COAST AIR BASIN-1976

POLLUTANT (STANDARD)	AVERAGING TIME	DAYS EXCEEDING STANDARDS	MAXIMUM CONCENTRATION	% MAXIMUM CONCENTRATION EXCEEDING STANDARD	POPULAT-* ION EXPOSURE
Oxidant					
Federal (.08 ppm)	1 hour	252	0.38 ppm	375	68 %
State (.10 ppm)	1 hour	238	Same	280	
Carbon Monoxide					
Federal (9 ppm)	8 hour	118	26.0 ppm	189	77 %
State (10 ppm)	12 hours	119	25.0 ppm	150	
Nitrogen Dioxide					
State (.25 ppm)	1 hour	50	0.53 ppm	100	82 %
Sulfur Dioxide					
Federal (0.5 ppm)**	1 hour	0	.25 ppm	---	
State (.05 ppm)***	24 hours	45	.138 ppm	180	0.5%
Sulfates					
State (25 ug/m^3)	24 hours	62	48 ug/m^3	170	57 %
Particulate					
State (60 ugm/m^3)	Annual average	Annual average	166 ug/m^3		95 %*
Lead					
State (1.5 ug/m^3)	Monthly mean	12 Months	10.04 ug/m^3	660	Not calculated

*Population exposure is calculated only for the most stringent standard for each contaminant.

**The California Air Resources Board has determined that only the Los Angeles County portion of the SCAB is projected to violate the SO_2 standard more than once per year.

***This standard is only considered violated when either the State 24 hour particulate matter and/or the one hour oxidant standard is violated.

table 18

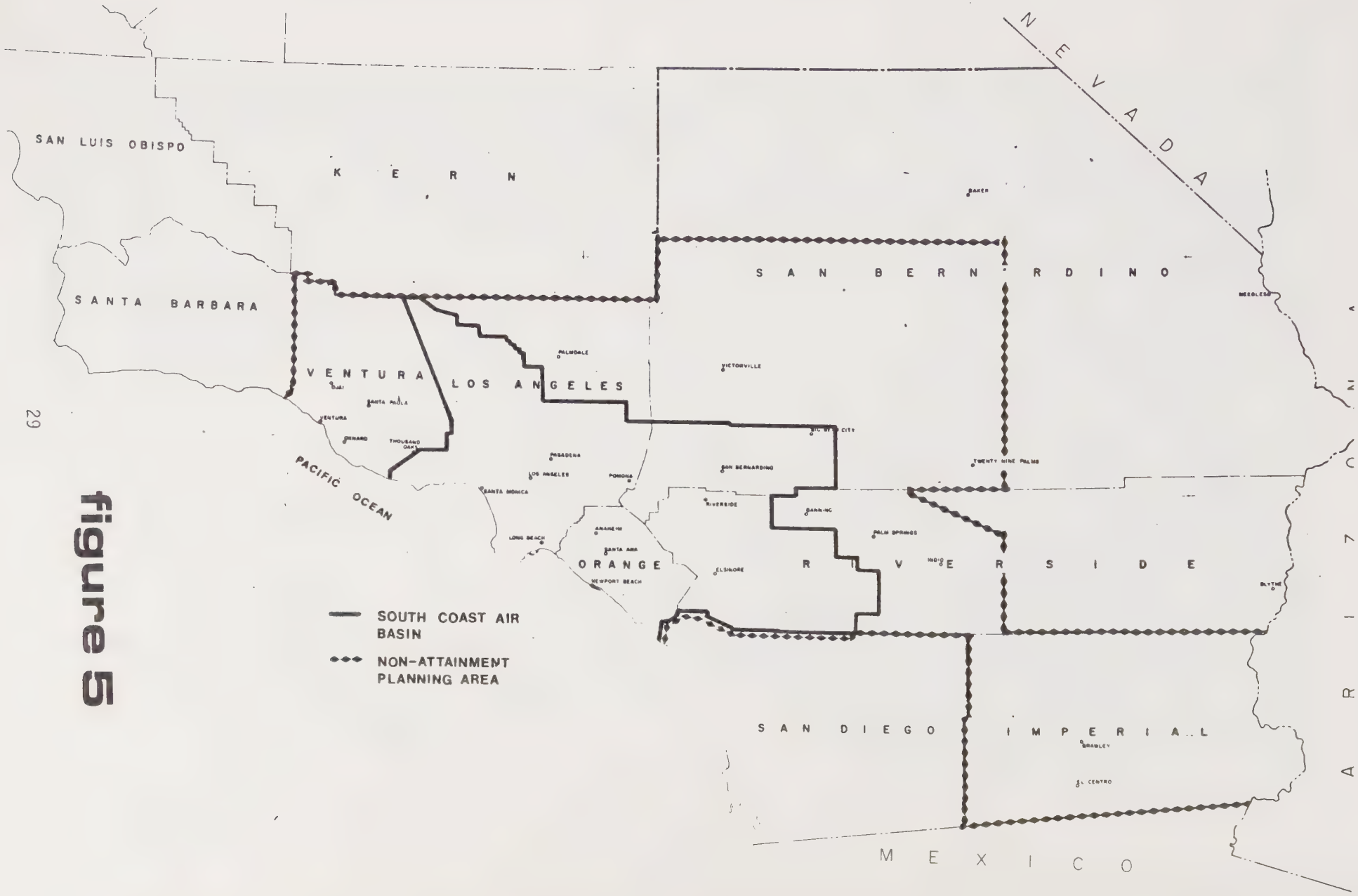
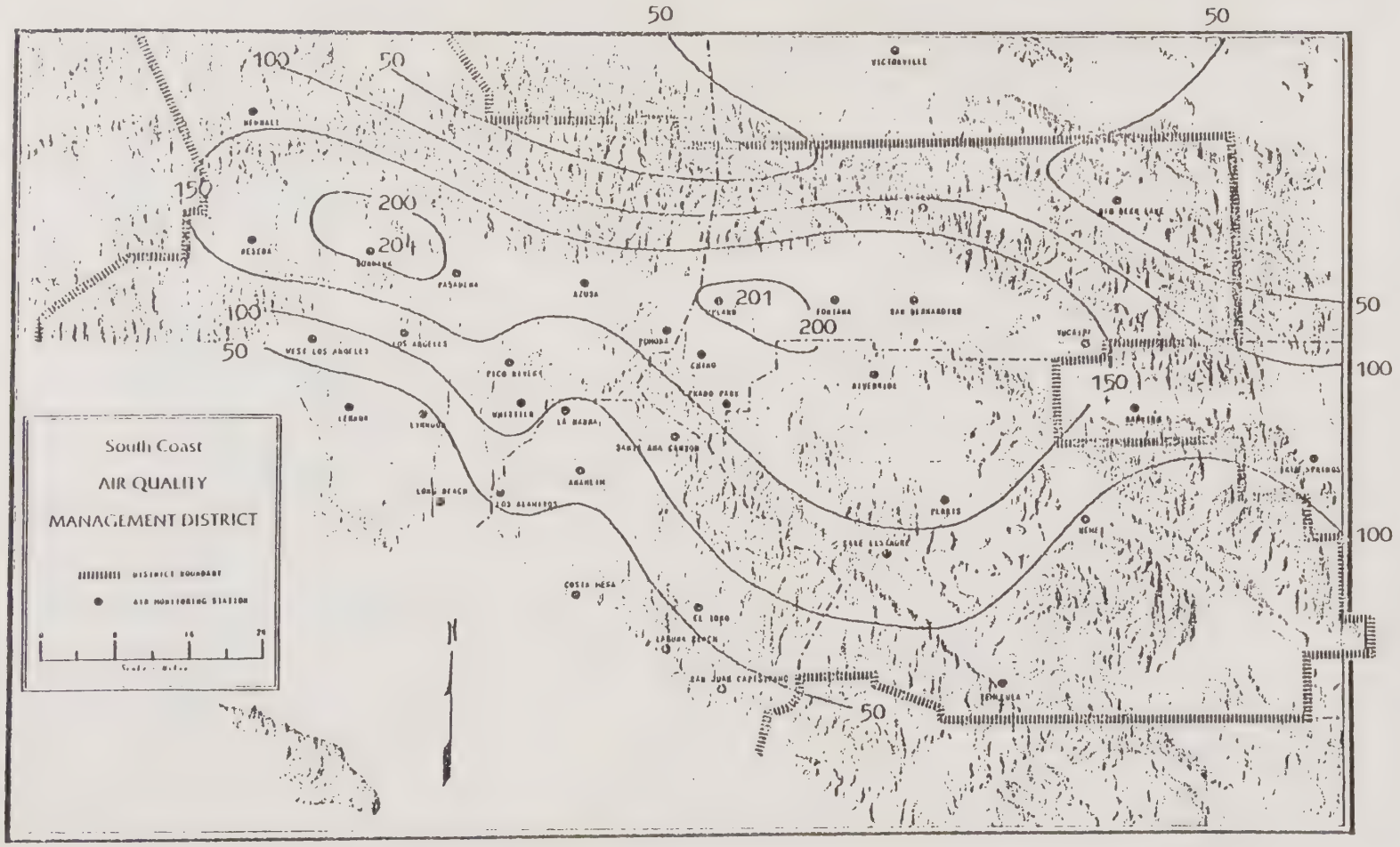

SAN LUIS OBISPO
KERN
NEVADA
SANTA BARBARA
SAN BERNARDINO
VENTURA
LOS ANGELES
PACIFIC OCEAN
ORANGE
RIVERSIDE
SAN DIEGO
IMPERIAL
MEXICO
ARIZONA
SOUTH COAST AIR BASIN
NON-ATTAINMENT PLANNING AREA

figure 5

OXIDANT

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (1-HR. AVG. O_3 > 0.08 PPM)

1976



-o- Less than 9 months of data.

figure 6

NITROGEN DIOXIDE
NUMBER OF DAYS VIOLATING STATE STANDARD (1-HR. AVG. $NO_2 \geq 0.25$ ppm)
1976

Figure 7

Less than 9 months of data.

CARBON MONOXIDE

NUMBER OF DAYS VIOLATING FEDERAL STANDARD (8-HR. AVG. CO > 9 PPM)

1976

figure 8

Less than 9 months of data

TOTAL SUSPENDED PARTICULATE
PERCENT OF DAYS VIOLATING STATE AIR QUALITY STANDARD (TSP ≥ 100 ug/m^3)
1976

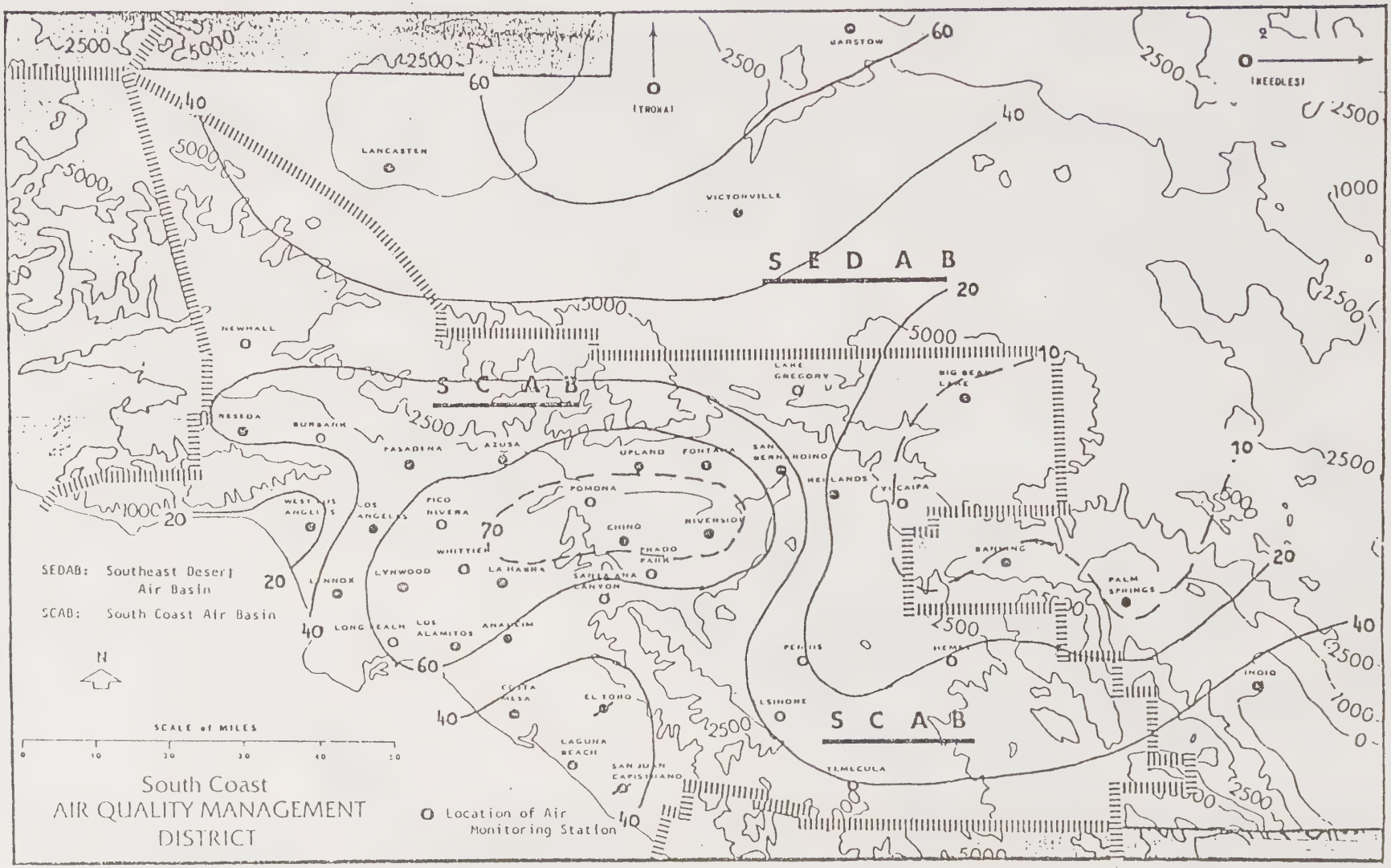


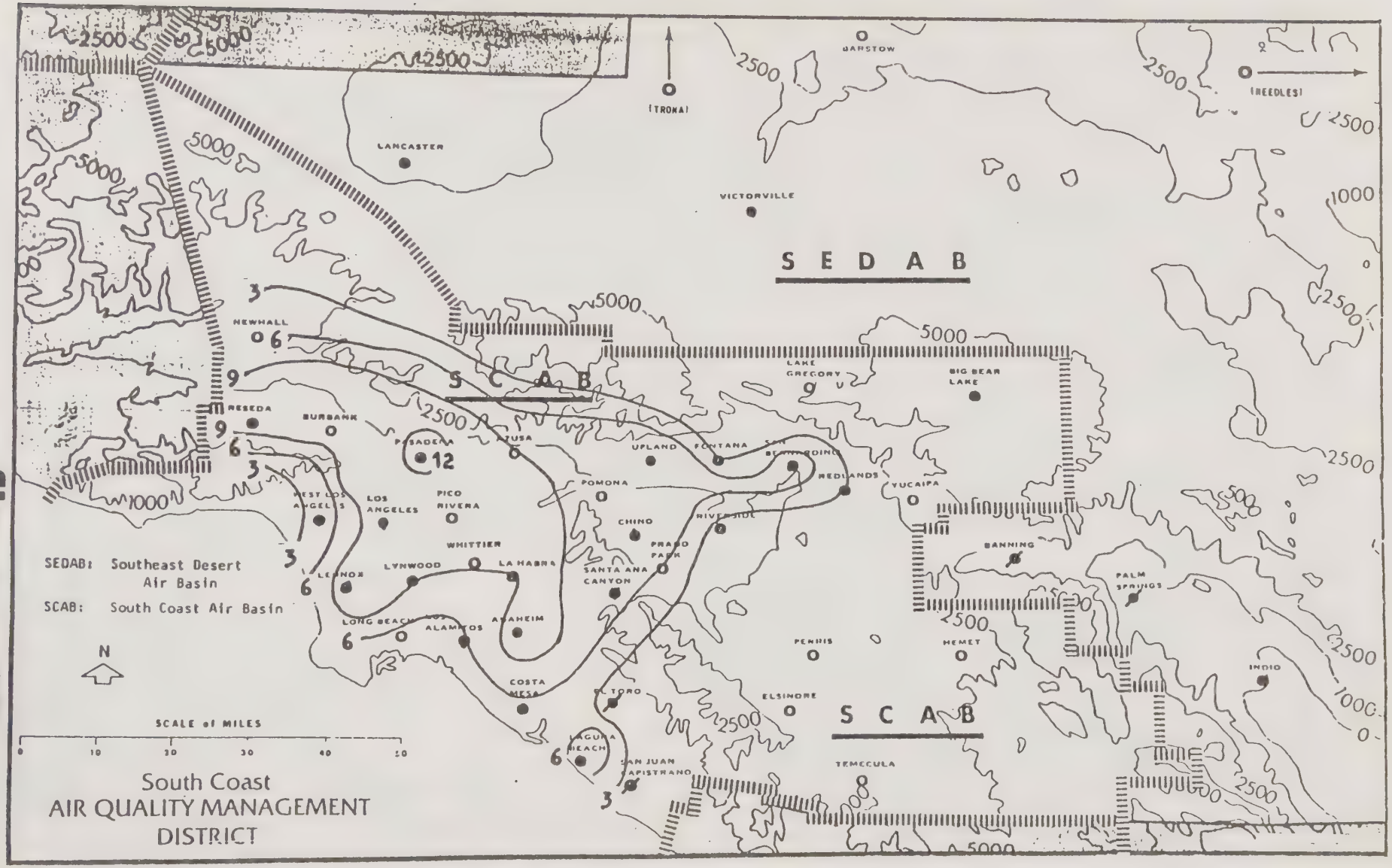
figure 9

● indicates air monitoring station where pollutant is measured. ○ indicates station where pollutant is not measured.
indicates less than a full year's data.
—— solid lines are at intervals of 20%. – – dashed lines are at intervals of 10%.

LEAD

NUMBER OF MONTHS VIOLATING LEAD STANDARD (MONTHLY AVG. Pb $\geq$ 1.50 ug/m^3)

1976



● indicates air monitoring station where pollutant is measured. O indicates station where pollutant is not measured.

● indicates less than a full year's data.

figure 10

SULFUR DIOXIDE

NUMBER OF DAYS VIOLATING STATE STANDARD (24 HR. AVG. $SO_2 \geqq 0.04$ PPM)*
1976

figure 11

• Less than 9 months of data.
Number of days violating standard at Fontana revised to reflect corrections in data.

* On June 29, 1977 the ARB adopted a new state standard for sulfur dioxide of 0.05 ppm/24-hour average, occurring in combination with a violation of the state oxidant or TSP standards.

SULFATE
PERCENT OF DAYS STATE STANDARD VIOLATED (24 HR. AVG. $SO_4^{=} \geq 25\ ug/m^3$)
1976

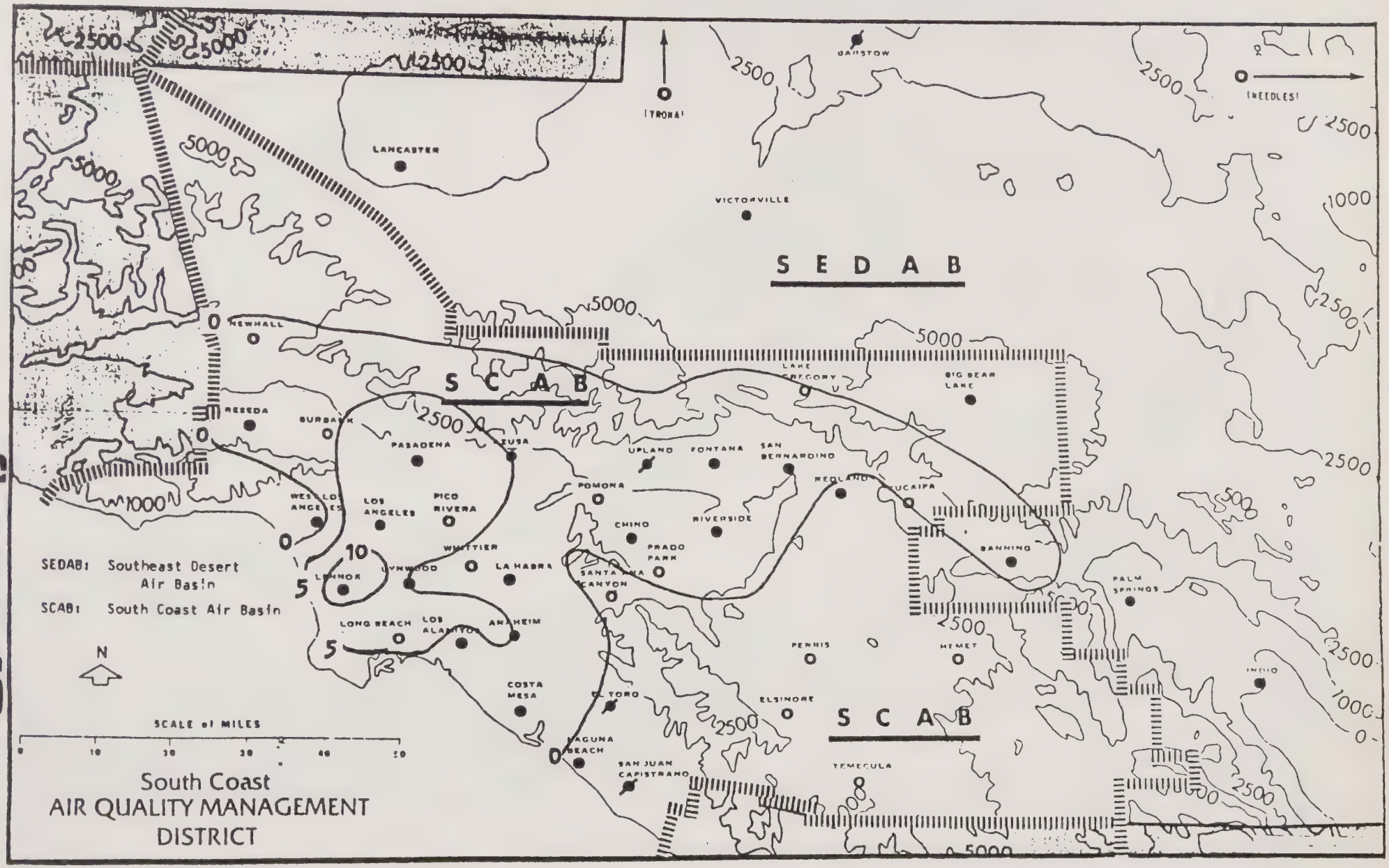


figure 12

● indicates air monitoring station where pollutant is measured. O indicates station where pollutant is not measured
● indicates less than a full year's data.

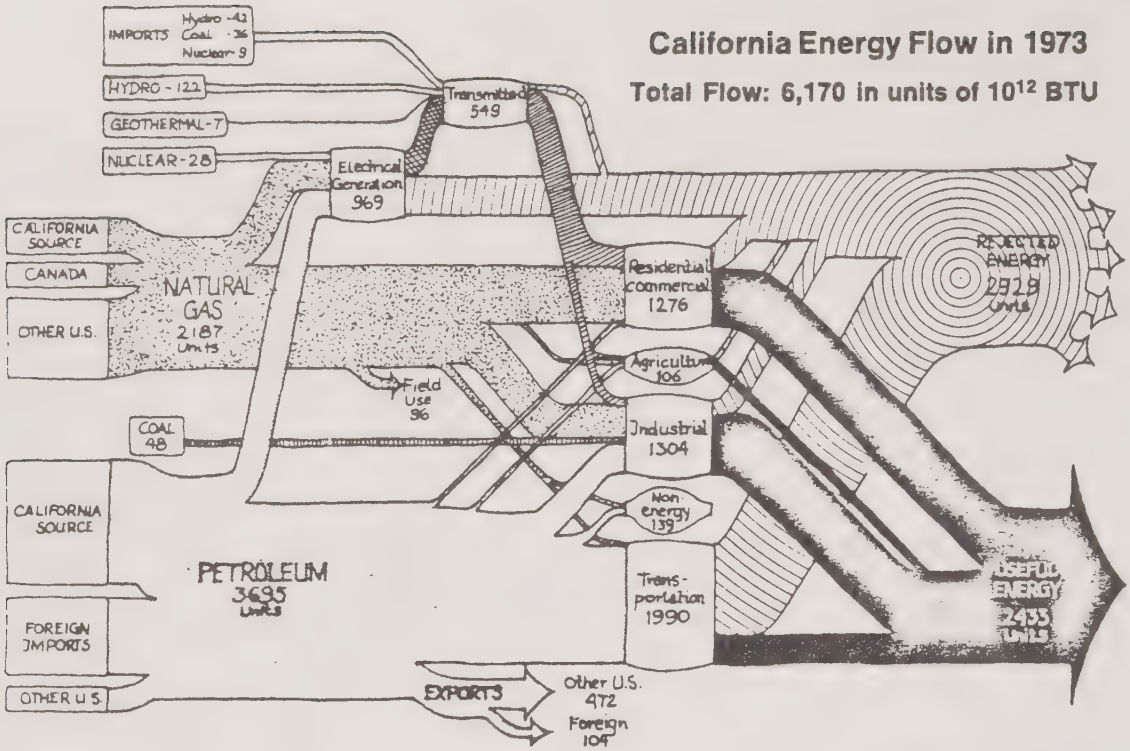
F. ENERGY

Energy, which is critically important to our society, is derived principally from the consumption of fossil fuels. Transportation is totally dependent on fuels refined from petroleum, a resource whose future is very much in doubt.

Energy supplies of various types are interrelated as are the different categories of energy consumption. More than 95% of California's energy comes from oil and natural gas. Most natural gas flows directly to final uses, but oil is processed by refineries which produce a large number of fuels and other materials. Thus the production of gasoline is directly related to the output of power plant fuels, feedstocks for plastics manufacture, aviation fuels, power plant fuel, and dozens of other products.

Energy use generally is categorized by demand sectors such as transportation, electricity generation, residential/commercial, and industrial. Ordinary bar and line graphs of these quantities fail to provide an adequate representation of the complete character of energy supply and demand. Graphical displays, such as Figure 13, are helpful, but even this needs to be seen as a snapshot of an ever-changing situation. This has suggested an analogy to Hart (1977):

> "It helps somewhat to hold in mind the image of a river: an enormous, many-channeled flow of heat and power. California's energy river reaches us from many sources -- from fields of oil and natural gas; from turbines spinning in hydroelectric installations; from atoms splitting in nuclear-power plants. We depend on sources outside the state borders for more than half our energy.
>
> "Much of the energy from these diverse sources flows directly to its final use. The burning of gasoline in automobile engines is one such direct use: the heating of a home by stored solar energy is another. But one significant part of the energy river is diverted, so to speak, before it reaches the consumer. It enters central power plants and is transformed into electricity. By the time this electrical current reaches its final users, more than half the original energy content has already been expended.
>
> "Figure 13 is a fairly complete picture of the "energy river" as it flowed during a past year -- a regular Amazon, massive, many channeled, interconnected, braided. Energy flow can be measured in many units, the unit used here is the British Thermal Unit (the quantity of heat required to raise the temporature of one pound of water one degree Fahrenheit). The 6,170 trillion BTUs consumed in California in 1973 are the equivalent of just over a billion barrels of oil."



Source: Hart (1977), based on work by Laurence Laboratory (Berkeley)

This discussion has three parts: 1) regional energy-related links with the rest of the world, in terms of economic, institutional, and physical elements; 2) regional energy supply and demand; and 3) regional uses of energy for transportation.

1. REGIONAL ENERGY RELATIONSHIPS

Increasing competition for resources provides the background for the current energy-related connections between the region and the world.

Nationwide energy demand has been growing 4% to 5% annually. Consumption of oil has risen much more rapidly (7% a year), reflecting a major shift of powerplant fuel in the east and midwest from coal to oil. While demand has increased nationwide, U.S. oil production has declined, causing a rapid increase in oil imports.

Oil price increases by the Organization of Petroleum Exporting Countries (OPEC) affect every segment of the economy; one result has been higher demand and higher prices for other sources of energy -- coal, domestic oil, natural gas, and even geothermal steam. Post-1972 price changes have increased the real cost of oil (measured in 1948 dollars), reversing a long-standing trend of declining relative costs. Between 1948 and 1972, the real cost of oil declined by 30% and coal by 40%. On the same scale, oil now costs around 150% more than in 1948.

figure 13

In response to the abrupt changes in energy markets, the nation and the State have made a number of institutional changes. The International Energy Agency was established to coordinate the energy-related financial and commercial actions of the industrialized non-Communist nations. At the national level, the Department of Energy was established to centralize most federal agencies concerned with energy resources, development and regulation, including the Energy Research and Development Administration (ERDA) and the Federal Energy Administration (FEA). The Department of Energy also absorbed the Federal Power Commission. In California, the ad hoc Energy Planning Council established in 1973 was superseded by the California Energy Commission on January 2, 1975.

2. FUTURE FUEL SUPPLIES

The complete dependence of all transportation modes on petroleum-based fuels makes future prospects for petroleum supplies critically important. Currently, there is an abundance of petroleum available on the world market. While the United States and other industrialized nations are dependent on the small group of OPEC nations for much of this initial resource, the price (in terms of constant dollars) has declined in the past year or so and there are no supply shortages. These conditions suggest that the era of low-cost abundance of oil may continue for some time to come.

Careful students of global petroleum resources generally arrive at a more pessimistic conclusion. They argue that current supply conditions are temporary. Economic growth to meet the needs of increasing population and improved living standards eventually will increase demand, and prices in real terms will increase by 2% to 4% annually. As world-wide consumption increases, the cheap oil of the Middle East will be depleated. Production then will peak late in this century, when prices may be double current levels. Afterward, either prices would increase rapidly or there would be some other form of allocating the diminishing supply of oil.

The alternative responses to this latter scenario are manifold. Fuels for ordinary automobiles may be obtained from coal or shale -- at considerable cost, environmental effects, and social reorganization. Biomass from agriculture can yield alcohol which may power automobiles. Electric vehicles may be used -- powered by electricity from nuclear or solar generating plants. Any of these changes would increase the cost of transportation and thereby reduce the demand for mobility in the region.

3. REGIONAL TRANSPORTATION ENERGY

The statewide pattern of energy supply and demand given in Figure 13 is closely analogous to the regional distribution. During 1973, regional crude oil production amounted to 51% of the state total and was equivalent to 60% of regional demand. Crude oil for refining included 34% imports from overseas (non-Canadian) foreign sources and 8% from Alaska. Thus, 42% of all crude oil used in the region arrived by ship. Other states provided 3% of the petroleum. Regional gas production was 25% of the state total, but only about 12% of regional demand. Production of both oil and gas is decreasing in the region, as well as in the rest of the state.

Overall, the region is more and more dependent on external sources of energy. About 93% of the natural gas and 21% of the electricity consumed in the region come from other states, and regional dependence on imported oil has been increasing.

Within the region, electricity is generated by 25 thermal stations (oil and gas fired) and 16 hydroelectric plants (most are quite small) with a combined capacity of 14,040 megawatts. Electric power sources outside the region include nuclear, coal fired and hydroelectric generating stations. Generating electricity in thermal plants is inherently inefficient, resulting in an immediate loss of 65% of fuel energy content (Figure 13).

Transportation is the region's largest energy-consumption sector. The fuels for transportation are produced predominantly by refineries in the Los Angeles-Long Beach area which have a combined refining capacity of about one million barrels of crude oil daily. State-wide transportation fuel uses are shown in Table 19, distributed according to energy content. This distribution can be taken to be the same as the regional usage.

Transportation Fuels Used In California During 1974

Type of Fuel	Amount (millions of gallons)	% Distribution*
Gasoline	9694	70
Jet Fuel	1641	13
Diesel (Highway)	761	6
Diesel (Off-Road)	410	3
Residual Fuel	683	6
Other**	-	2

* Energy content basis
** Electrical, LPG, natural gas, aviation gasoline

Source: Caltrans

The massive fuel consumption by automobiles makes their average fuel economy critically important to regional fuel consumption rates. Table 20 shows the recent trend toward increased fuel economy of automobiles.

Fuel Economy By Model Year
Light-duty Motor Vehicles In The SCAG Region

Model Year	Avg. MPG*	Remarks
1958	13.15	* For purposes of calculations, all models over 10 years are assumed to equal 13.15
1959	13.20	
1960	13.62	o Domestic compacts introduced
1961	14.05	
1962	13.95	
1963	13.95	
1964	14.00	
1965	13.70	
1966	12.30	o First standard for HC and
1967	12.25	CO emissions
1968	12.20	
1969	12.15	
1970	12.45	o First subcompacts introduced
1971	12.10	o First standard for NO emissions
1972	12.35	
1973	12.05	
1974	13.90	o Transprtation Energy and Conservation
1975	15.60	Data Book October, 1977
1976	17.80	" "
1977	18.60	" "

Sources: Mikolowsky, 1974 except as noted.

The changes shown above represent responses to increasing fuel prices and to the shift toward vehicles with improved fuel economy as required by federal legislation (Table 21).

Federally-Mandated New Vehicle Fleet
Average Fuel Economy Standards

Model Year	MPG	Model Year	MPG
1978	18	1982	24
1979	19	1983	26
1980	20	1984	27
1981	22	1985	27.5

Source: Wall Street Journal, June 27, 1977.

table 20
table 21

Automobile fuel economy is affected by many factors. Much of the energy in fuel is dissipated in basic thermodynamic processes and friction in the automobiles, and other portions in certain optional features (Table 22). The energy in one gallon of fuel could move a Pinto almost 200 miles, but engine and other losses reduce this by more than 90%.

How thermodynamics and friction reduce automobile mileage.

	Thermal efficiency (per cent)	Miles per Gallon
All chemical energy converted into mechanical energy	100	194
Theoretical Otto cycle (ideal gases, perfect heat release)	57	116
Real Otto cycle (heat loss dissociation, non-ideal gases, indicated efficiency)	33	68
After subtracting pumping losses at road load, 40 m.p.h.	23	44.6
After subtracting mechanical losses (engine friction) at road load, 40 m.p.h.	17	33
After subtracting carburetor metering, choke, accelerator pump, fan, manifold distribution, and distributor retard losses	15.5	30
After subtracting automatic transmission losses	11.9	23
After subtracting power steering and generator losses	10.3	20
After subtracting air conditioning losses (1.5 h.p. continuous) (Air conditioning requires higher idle speed and is used only at certain times.	8.5	16.4

Source: Kummer, J. T. 1975. The Automobile As An Energy Converter. Technology Review, vol. 77, no. 4 (February - p. 27-37)

Table 23 gives more detail on losses resulting from various optional features. Increased weight and accessories have raised fuel consumption much more than emission controls. However, EPA tests showed that 1976 model automobiles qualified for sale in California averaged 11% less fuel economy than the national average.

table 22

ENERGY EFFICIENCY IMPACT OF VARIOUS POWER CONSUMING FACTORS

ITEM	FUEL CONSUMPTION EFFECT
Vehicle Weight	to 50% loss+
1973 emission laws	7% loss(1)+
Air conditioning	7% loss+
Automatic transmission	10% loss*
Rotary engine	20% to 35% loss+
Diesel engine	to 70% gain+
Radial belted tires	to 10% gain*
Engine performance	to 10% gain*

(1) EPA expected this to be unchanged for 1975 cars
+Goss, W.P. and McGowan, R. 1973 ASME
*Transportation Research Board - National Research Council. June 11/74 "Reducing Energy Demand per Vehicle."

Fuel economy also depends on average trip speed. By correlating average speed with trip length, fuel consumption can be estimated for various trip types. Table 24 suggests that 14% of all gasoline is used for trips of up to two miles in length.

ESTIMATED DISTRIBUTION OF AUTOMOBILE FUEL CONSUMPTION WITH TRIP SCALE

	Trip Length (Miles)	Percent Total Person Trips	Percent Total VMT	Percent Fuel Consumption
Activity Center	0-2	25	4	14.3
Community	1-6	41	17	18
Metropolitan	4-20	27	43	36
Intermetropolitan	15-60	6	27	24.2
Regional	Over 40	1	9	7.4

table 23

table 24

The rate at which average fuel economy (or other average operating characteristics) can be affected by changes in automobile manufacture is determined by the distribution of automobile use (miles per year) as a function of automobile age. According to Table 24, about half the total mileage in the region is generated by vehicles less than three years old. Hence overall changes of average mileage affect the regional fuel use relatively quickly: 18% the first model year, 35% the second year, 47% the third year, and so on.

Automobile manufacturing and supporting operations involve much more energy than is expended directly as fuel. Studies by Hirst at Oak Ridge National Laboratory have shown that automobile-related energy requirements are, in total, as great as the energy consumed as fuel. These include fuel manufacture (amounting to 10% of fuel energy), automobile manufacture, sales, repairs, and other operations (not counting highways). Hence, the energy saving expected from reducing use is diluted in the short run by the continuation of these related energy uses.

Table 25

(This table is not included)

Within the region and the state, gasoline consumption is about 20% greater than for the nation as a whole. In 1969, the nation's consumption was 2.4 gallons per passenger vehicle daily, compared with 2 gallons daily nationwide, although recent conditions revised that pattern.

From 1960 to 1973, annual gasoline consumption in the region increased about 5% annually, reflecting rising population, increasing vehicle usage and, for most of the period, declining fuel economy (mpg). Estimated rates of regional gasoline consumption since 1971 are shown in Table 26, together with year-to-year changes. The steady progression was interrupted by the 1973-74 energy crisis precipitated by the Arab nations' oil embargo. Gasoline consumption was diminished during the shortages of 1974, and remained below previous levels until last year. However, consumption has been rising and, during 1977, regional gasoline sales reached 5.8 billion gallons, about 12% above the 1973 level.

Because of improving automobile fuel economy, gasoline demand is expected to reach a peak by the end of this decade and then decline during the early 1980's. Beyond that time, gasoline use depends on price, automobile fuel economy standards, and many other factors.

Regional Gasoline Consumption

Year	State Total (Billions of gallons)	Regional Total (Billions of gallons)	Year-to-Year Change %
1971	9.4	4.8	-
1972	10.0	5.1	6.5
1973	10.4	5.1	3.9
1974	9.9	5.0	4.7
1975	10.2	5.2	3.0
1976	10.8	5.5	6.0
1977	11.3	5.8	4.5

Source: State Board of Equalization.

Aviation currently consumes a relatively small proportion of the region's transportation energy (15%). While other transportation energy uses were comparatively stable during the 1960s, aviation energy uses increased about 130%. Since 1969, however, annual increases in aviation fuel usage here slowed tremendously. Currently, energy demand for freight is growing faster than that for passenger service. The demand for aviation fuel is not expected to be reduced by increased energy costs.

table 26

Buses are more effective energy users than automobiles. The SCRTD is realizing about 44 passenger miles per gallon of diesel fuel. Automobiles average 1.4 passengers, giving a current average effectiveness of about 21 passenger miles per gallon of gasoline.

The region's railroad fuel demand is about 200 million gallons of diesel fuel and 1.4 million gallons of residual oil annually. Marine fuels annually amount to about 40 million gallons of bunker fuel. The region's annual recreational and other marine uses of gasoline and diesel fuel are about 67 million gallons and 92 million gallons respectively, and increasing 5% each year.

G. EXISTING TRANSPORTATION SYSTEM CHARACTERISTICS

Introduction

The existing transportation system in the SCAG region provides a degree of mobility and access that attempts to satisfy the demand to travel at a reasonable level of service and cost to the user. The scattered land use pattern in the urbanized area makes this a challenging objective. The Southern California life style is built on travel.

This section contains a description of the existing transportation facilities by mode and some basic travel characteristics of the population. Discussion will focus on a regional perspective of the major people moving components of the system (i.e., public transit, highways, aviation) Besides moving people, though, the transportation system moves goods and services. The major movement of goods and services is provided by the region's railroads, ports and highways.

Although not major modes, bikeways and pedestrian facilities are other modes of the total transportation system (discussed in the non-motorized section).

I. TRANSIT

At present, the SCAG region has over thirty major transit operators providing service (see Figure 14). This section will identify these agencies and provide documentation for selected operating characteristics. Figure 14 identifies these operators along with their areas.

Each day, over one million riders use the SCAG region's transit systems. Of this total 850,000 use the Southern California Rapid Transit District service and over 70,000 use the Orange County Transit District service. The SCRTD operates the fourth largest transit system in the nation. The remainder of this regional patronage are distributed among other counties and municipal operators in the urbanized area. Table 27 provides patronage figures for each county. Transit trips are still a small but recently growing percentage of the total person trips in the region (approximately 3.36%).

Major Public Transit Operators
in the SCAG Region

Note: See the 1978 DRTP for this map.

figure 14

Selected Characteristics of Transit System*
SCAG Region
FY 1978

County	Number of Revenue Vehicles[1]	Patronage[2]	Mileage[3]
Imperial	--	--	--
Los Angeles	3072	340,695,900	109,994,700
Orange	369	21,138,478	14,664,598
Riverside	70	2,468,061	2,225,502
San Bernardino	117	6,491,561	4,057,165
Ventura	37	2,823,900	1,216,388
Region	3665	373,618,000	132,158,400

1. Includes buses, vans, and other vehicles used for service.
2. Unlinked (all boardings are counted).
3. Revenue miles only; does not include deadheading.

Sources:
* Based on Short-Range Transit Plans except for Long Beach Public Transportation Company, SCRTD, and Omnitrans figures. These were obtained from TDA Claims (Article 4).

A. PARATRANSIT

Introduction

Conventional transit can be defined as a service operating on fixed routes and schedules. Paratransit is generally defined as a mix of transit-service concepts that are less capital-intensive and more demand-responsive than conventional transit. In most cases, paratransit vehicles carry a small number of passengers, operate without rigid routes or schedules, and can often be demand activated (accessed by phone, or hailed at curbside). Listed below are the most common paratransit modes, their service characteristics, and their usual operator, (public or private sector):

table 27

PARATRANSIT MODES

Category	Service Characteristics	Typical Operator
Dial-A-Ride	phoned flexible route	Public or Private
Vanpools	prearranged ride sharing	Private
Subscription buses	relatively fixed route and time schedule	Private
Carpools	usually employer sponsored	Private
Jitneys	relatively fixed route non-scheduled hailed at curb	Private
Taxis	phoned or hailed at curb non-fixed route	Private
Rental Cars	daily rental, primarily serves businessmen and tourists	Private

Source: SCAG 1976 RTP

All but one of these paratransit systems are usually operated by the private sector. Dial-a-ride services, most commonly provided by the public sector could, with more incentives and less regulatory control, become a private sector operation.

Services

The SCAG region has a significant demand for paratransit services. Currently, the institutional structure for providing this service is limited. A number of the major transit operators (SCRTD, OCTD, and others) provide paratransit services for selected groups and/or provide aid to circulation in activity centers. A number of private, non-profit organizations and public agencies provide special services for the elderly, handicapped, and persons needing medical treatment. Commuter Computer (a non-profit corporation) provides carpool matching services for most urbanized areas of the region. Numerous taxis and several privately owned charter buses and limousines provide activity center transportation service.

Due to the lack of data on paratransit services in the region, SCAG conducted a survey to identify service providers and their specific operational characteristics. At present, only Los Angeles County is completed so the following information will pertain to only this county.

table 28

In Los Angeles County, 860 agencies provide some mode of transportation to their clients. This figure does not include service available through the 103 public school districts. The transportation service provided was classified into four major types:

- 412 agencies own vehicles for transporting clients, while 164 agencies operate vehicles which they do not own;
- 388 agencies have volunteers or staff provide transportation in their personal cars;
- 206 agencies contract for transportation services; and,
- 200 agencies reimburse clients for their transportation expenses.

In addition, 51 agencies stated that they planned initiation of new service or major expansion of existing service.

Concerning client groups served, the survey showed that all age groups are served by at least 70% of the transportation providers. Twenty-five percent of the agencies stated that they have no eligibility requirements for transportation. The remaining agencies listed such requirements as residence in a specific geographic area, age, membership, state of health and agency discretion.

The size and mix of vehicles in the paratransit vehicle fleet is shown in Table 29 below.

Los Angeles County Paratransit Vehicle Fleet
1977

	Agency Owned	Agency Operated but not Owned
Large Bus	2,493	64
Small Bus	194	81
Van	1,018	211
Auto/Taxi/Limousine	1,611	840
TOTAL	5,316	1,196

When the survey results are available for the other counties this data will be incorporated into this setting.

table 29

II. HIGHWAYS

The vehicular system has always been considered the most important component of the transportation system in the SCAG region. Automobiles are the dominant mode of travel and every day about 5.5 million of them carry over 96% of the 37,865,200 daily person-trips. People with automobiles available to them enjoy almost unlimited access. The motor vehicle population has been increasing at a faster rate than the population in the past decade. Further, the 1976 Urban/Rural Travel Survey indicates that households with two or more autos is increasing. Table 30 provides a county and regional look at the motor vehicle population as of May 2, 1977.

SCAG Region Motor Vehicle Population
(May 2, 1977)

County	Automobiles	Motorcycles	Commercial Vehicles	Other	Total
Imperial	37,042	1,959	16,586	10,931	66,518
Los Angeles	3,566,904	166,329	639,056	305,122	4,677,411
Orange	952,839	55,240	183,211	126,615	1,317,905
Riverside	269,170	16,175	79,764	88,432	453,541
San Bernardino	352,889	23,812	104,015	76,654	556,370
Ventura	229,520	14,497	54,262	39,381	337,660
Region	5,407,364	278,012	1,076,894	647,135	7,409,405

Source: California County Fact Book 1977-78 (published by County Supervisors Association of California).

Table 31 shows existing lane miles of freeways and highways. The existing highway system for the SCAG region is contained in Figure 15.

Existing State Highway Miles - SCAG Region

Counties	Freeway Miles	Non-Freeway Highway Miles	Total
Los Angeles	491	454	945
Orange	120	111	233
Ventura	86	174	260
District 7	697	739	1436
Riverside	136	294	430
San Bernardino	413	786	1199
District 8	549	1080	1629
Riverside	112	153	265
Imperial	97	310	407
District 11	209	463	672
SCAG Region	1455	2282	3737

Source: SCAG 1978 Regional Transportation Plan.

table 30
table 31

Existing Highway System

Note: See 1978 DRTP for Map.

figure 15

The regional roadway system contains an extensive system of county roads and city streets. Existing mileage by county for 1976 is contained in Table 32 below.

Mileage of County Roads and City Streets by County

1976

County	County Roads	City Streets
Imperial	2,596	215
Los Angeles	4,013	14,594
Orange	702	3,898
Riverside	3,058	1,810
San Bernardino	4,892	1,937
Ventura	632	994
Region	15,893	23,448

Source: California County Fact Book 1977-78 (published by County Supervisors' Association of California).

Congestion

One of the most visible problems with the current highway system is congestion. Today the system has 187 miles of congested freeway as shown in Figures 16 and 17. Problems associated with congestion are decreased average speeds, increased commuting times and increased fuel consumption and certain emissions. Overall, this condition decreases the personal mobility and accessibility for residents of the region.

table 32

Congestion A. M.

Note: This map will be a part of the final DEIR.

figure 16

Congestion P. M.

NOTE: This map will be provided later as a part of the final DEIR.

figure 17

III. AVIATION

The SCAG region's six-county airport system is one of the busiest in the nation. Five of the SCAG region airports are consistently listed by the Federal Aviation Administration (FAA) among the top ten in the nation for numbers of aircraft operations. These airports, listed in descending order of numbers of aircraft operations on the FAA ranking for Calendar year 1976 are: Orange County, Van Nuys, Long Beach Municipal, Los Angeles International, and Torrance Municipal.

Regional air-carrier passenger travel demand was 35 million annual passengers (MAP) in 1977. National statistics indicate that about 204 million passengers were carried by the air carriers and 180 million pilots and passengers were carried by general aviation aircraft. Figure 18 identifies the major air carrier airports in the SCAG region and Table 33 provides operational details, specifically, number of passengers and tons of air cargo for calendar year 1977. Currently, there are 11,000 based general aviation aircraft.

Air travel clearly dominates passenger travel for trips of 300 miles or more. Approximately 50% of air carrier passenger trips and 75% general aviation aircraft pilots and passenger trips are for business. By offering significant time savings and travel cost advantages, air travel will continue to grow and dominate long distance passenger travel.

AIR CARRIER AIRPORTS

CY 1977 TRAFFIC COMPARISON

AIRPORT	PASSENGERS (NUMBER)	AIR CARGO (TONS)
LOS ANGELES INTERNATIONAL	28,361,863	812,290
ORANGE COUNTY	2,158,505	2,455
HOLLYWOOD-BURBANK	1,998,952	8,541
ONTARIO INTERNATIONAL	1,680,556	3,418
PALM SPRINGS	506,283	323
LONG BEACH	491,243	2,294
IMPERIAL COUNTY	48,683	203
PALMDALE AF PLANT 42	6,147	24
BLYTHE	3,726	21
SCAG REGION TOTAL	35,255,958	829,569

table 33

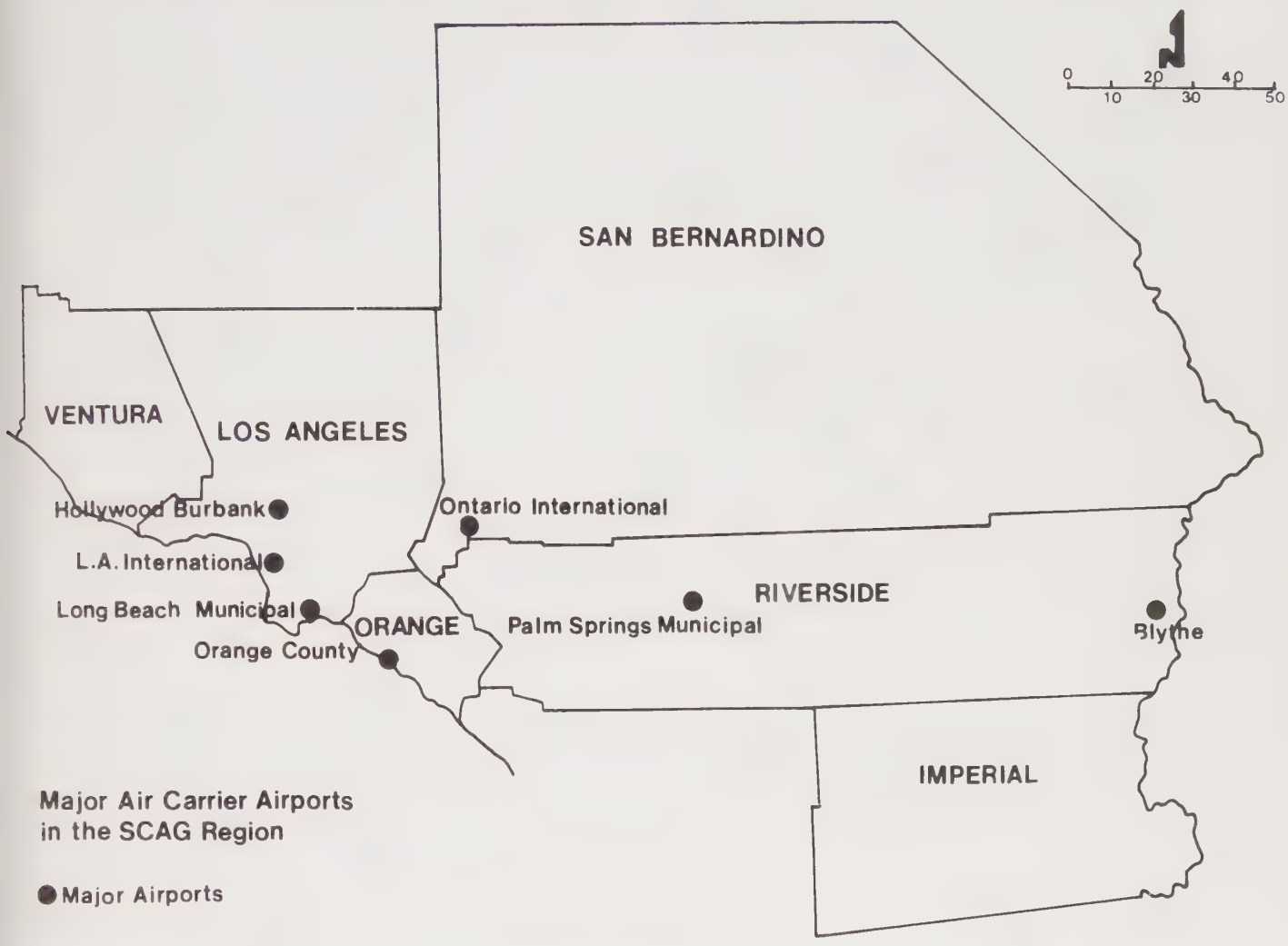

0
20
40
10
30
50
SAN BERNARDINO
VENTURA
LOS ANGELES
Hollywood Burbank
L.A. International
Long Beach Municipal
Orange County
ORANGE
Ontario International
RIVERSIDE
Palm Springs Municipal
Blythe
IMPERIAL
Major Air Carrier Airports
in the SCAG Region
Major Airports

figure 18

IV. NON-MOTORIZED

Non-motorized transportation includes all modes of travel that use human energy directly for propulsion. Bicycling and walking are the most common examples.

Bicycling has enjoyed a renewed popularity in the last few years, causing agencies throughout the region, state, and nation to plan for and develop programs and facilities for bicycles. For cyclists, bikeways are being planned and implemented, and secure bicycle parking racks, stalls, and compartments installed. Bike programs include bicycle-safety education programs, preparation and distribution of bicycle route and hostel maps, and creation of bicycle licensing and registration ordinances. Pedestrian activities are encouraged by maintaining existing sidewalks, constructing sidewalks to fill in missing segments between existing sidewalks, putting curb cuts in existing sidewalks for use by handicapped, and constructing over- and under-passes.

In the SCAG region each county has developed and adopted county-wide plans for bikeways and related bicycle facilities. In Los Angeles County the existing 275 miles of lanes, paths and/or routes are not totally interconnected due to the local nature of this mode of travel. (Utilization rates of bicycle facilities range from 50 to 500 bikes per day.) In conjunction with the counties, nearly 80% of the cities in the region have developed local plans for the same type of facilities interconnected and coordinated with the county facilities. For the most part, the plans include extensive networks of bike paths and describe projects being implemented progressively, using available funding to extend the basic system. Maps and material showing routes, convenience data and other physical information are available from the individual counties and cities.

In addition, CALTRANS has developed an extensive network of state bikeway routes on state highways throughout the state highway system with specific regional maps and convenience data available from CALTRANS District Offices. They also provide standards and guidelines for facility design, operational use, safety and traffic practices. These city, county and state plans have been serving the cyclist adequately and, to date, a regional plan for bicycles, or non-motorized transportation, has not been developed by SCAG.

Plans for pedestrian facilities have not been developed in general practice as separately identifiable programs. These facilities are usually implemented and funded as part of local plans for traffic and street/highway development at city and county levels. As such, they are consistent within themselves and no regional plans have been developed or considered necessary. Regional level coordination of pedestrian facilities has been primarily for the administration of SB-821 funds which includes regional policies for pedestrian and physically handicapped and elderly needs in project application and A-95 review.

Currently the number and use of bicycles is increasing. This poses no new issues, however, the increasing number and use of the Moped has significance. This vehicle is defined as a motorized bicycle. The State Motor vehicle Code permits operation of Mopeds on bicycle lanes and bicycle routes but not on bicycle paths, which are completely separated rights of way for the exclusive use of bicycles. The greater number of vehicles indicates the need for more educational programs in operating practices and traffic rules to promote safety and minimize the growth in accidents.

V. MARITIME, RAILROADS

Maritime transport in the region is almost wholly concerned with worldwide freight movement. Since the majority of world trade is conducted by ship, the ports play a vital role for commercial, industrial and residential interests. The Los Angeles Customs District comprises the ports of Long Beach, Los Angeles and Port Hueneme. The District handled $14.5 billion worth of trade in 1974--39% of the total trade at all West Coast ports. (Figure 19 notes the location of these harbors.)

The operation of the region's ports concerns an area much greater than the SCAG region. The Los Angeles Customs District serves a market area encompassing the southern portion of California as well as all or part of seven other Western states, and products imported here are shipped throughout the country. Thus the region's ports are of national significance.

Maritime passenger transport is of little significance in the SCAG region, although the Ports of Los Angeles and Long Beach are passenger departure points for pleasure cruises throughout the Pacific.

Rail transportation, like maritime transport, primarily moves freight. However, its structure is very different from that of maritime transport. railroads are, for all practical purposes, private sector providers of facilities and services reacting to transport demands primarily from other private sector parties. The public sector is related to operation of the railroads through regulatory authority and limited statutory powers of operation (AMTRAK).

The SCAG Region is served by three major railroad companies (see Figure 19): the Southern Pacific, the Union Pacific and the Atchison, Topeka and Santa Fe. It is by far the busiest rail market in the Western United States. twenty-one percent of all goods produced in the SCAG Region for shipment to U.S. markets are transported by rail. Over the past year, the increasing use of container shipping and demands for inter-modal capability have caused railroads to invest in new, modern facilities. Operations such as piggy-back, truck-on-flat car, and container-on-flat car are innovative services being offered.

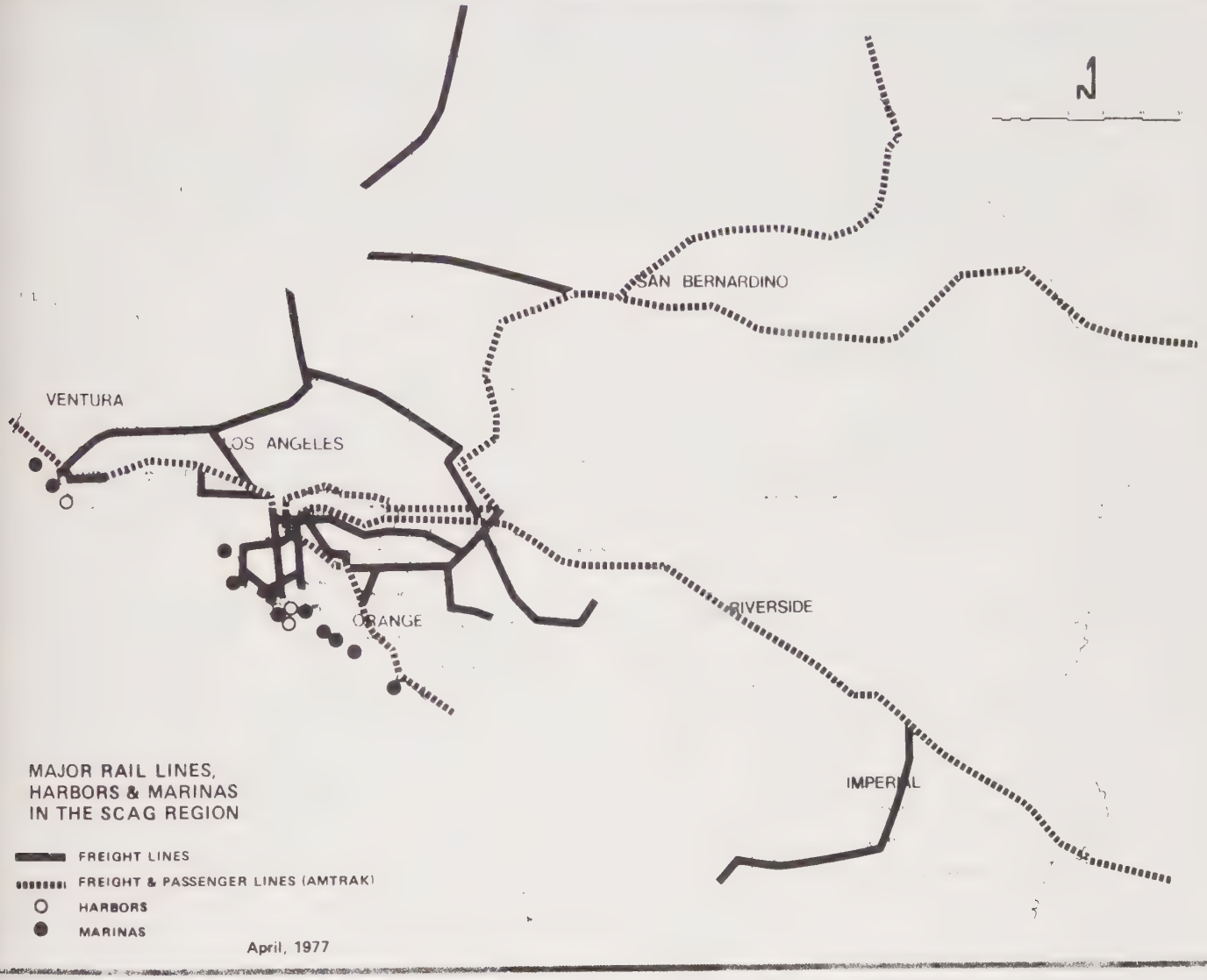

N
SAN BERNARDINO
VENTURA
LOS ANGELES
ORANGE
RIVERSIDE
IMPERIAL
MAJOR RAIL LINES,
HARBORS & MARINAS
IN THE SCAG REGION
FREIGHT LINES
FREIGHT & PASSENGER LINES (AMTRAK)
HARBORS
MARINAS
April, 1977

figure 19

Rail passenger transport in the region is almost negligible. Past SCAG planning efforts, however, have supported rail commuter travel as a viable alternative in some corridors of the region. AMTRAK currently operates some inter-regional rail service through the SCAG region to Chicago, New Orleans, Seattle and San Diego. For Los Angeles County there are presently 8 daily trains providing inter-urban service.

A study of passenger rail feasibility was conducted recently for the San Diego-Los Angeles Corridor Study. The Study found that, with only minor improvements, existing rights-of-way could provide reliable, frequent and environmentally acceptable inter-regional passenger transport in that corridor.

VI TRAVEL CHARACTERISTICS

This section presents a description of selected travel characteristics for the LARTS region. Using 1976 as the base year, data was generated for person trips and vehicle miles traveled . This information was produced using the LARTS model with revised trip generation rates and vehicle ownership models derived from data collected in the 1976 Urban/ Rural Travel Survey.

Analysis of the 1976 survey data showed that vehicle occupancy rates (by trip purpose) were essentially unchanged from those of 1967, when the first origin-destination survey was conducted. The distribution of home-based work trip travel times had not changed significantly from 1967. While the average trips per vehicle remained nearly constant, the per-capita trip rate increased from 3.2 in 1967 to 3.45 in 1976. This is attributed primarily to an increase in the percentage of households owning two or more vehicles and a concomitant drop in the proportion of zero-car households. Furthermore, the average number of persons per household decreased from 1967 to 1976, increasing households at a greater rate than population. Table 34 provides data for the LARTS region on VMT, trips, and assumptions used for the analysis. The socio-economic base (i.e., PHEL data) used was the SCAG-76 Revised Growth Forecast (adopted January, 1976).

Travel Characteristics SCAG Region* 1976	
1. Population (LARTS area) 10,133,893	
2. Trips	
a. Person Trips (week day)	34,944,000
b. Auto Driver Trips	23,920,000
c. Auto Passenger Trips	9,850,000
d. Transit Trips	1,174,000
% Transit Usage	3.36
Total Vehicle Trips	33,770,000
Average Trips per person	3.45
3. Vehicle Miles Traveled	
a. Vehicle Miles - Work (LDV)	67,015,000
b. Vehicle Miles - Non-Work (LDV)	104,113,000
Total VMT (LDV)	171,128,000
c. Vehicle Miles HDV	8,556,000
Total VMT	179,684,000
4. Assumptions	
a. Auto Occupancy (work)	1.2
b. Auto Occupancy (Non-work)	1.51
c. Fare Structure	1976 zonal
d. Auto Operating lost ('76$)	5.29 cents/mile

* LARTS Area
Source: CALTRANS LARTS Transportation Model.

table 34

RTP summary

IV.

IV. REGIONAL TRANSPORTATION PLAN SUMMARY

Introduction

The Regional Transportation Plan is updated periodically, to keep pace with changes in legal requirements, new technology, available funding, and so on. This RTP -- the fifth in a continuing series -- is built on policies and actions previously adopted (in the Critical Decisions Plan for Transportation, 1974, and the RTPs of 1975, 1976, and 1977), and includes new policies and actions adopted this year. This current Plan will, in turn, be refined and amended in future updates.

The Regional Transportation Plan must fulfill a number of state and federal legal requirements. These require that the region prepare a transportation plan which will include both short- and long-range elements, and result in a balanced and coordinated transportation system.

Other legal responsibilities to be met include the Clean Air Act. The Act requires each state to adopt a plan that will achieve and maintain acceptable air quality, using measures to control transportation, if necessary. This RTP contains policies and actions that specifically address air quality; these -- along with plans for controlling pollution from causes other than transportation -- will make up the regional element of the statewide air-quality plan.

The Regional Transportation Plan is not intended to be a builder's blueprint; rather, it is primarily a policy document that sets out clearly the ideas that will guide the future development of the transportation system. It identifies the directions in which the region must move. It says which kinds of projects are acceptable to the region and, by implication, which are not. It sets criteria by which each project can be judged, and defines what each should accomplish. The force of its policies derives from the fact that they are agreed upon by those representing every member government in the region, and the fact that only those projects and programs accepted into the Regional Transportation Plan become eligible for funding by the state and federal governments.

Each year, the RTP forms the basis for development of the Transportation Improvement Program, and is used in reviewing federal grant applications and projects using Local Transportation Fund (SB 325/821) moneys.

A. GOALS AND OBJECTIVES

Five broad goals for transportation have been adopted:

1. To develop a transportation system which will support the comprehensive goals of the region, taking into account the effect of mode selection, location, and time upon the physical, social, economic, and organizational environment.

2. To create a balanced transportation system integrated with planned land use to provide effective mobility for all people and efficient and economic movement of goods.

3. To minimize the need for long distance intraregional travel, particularly work trips, by guiding the development of the region to create self-sufficient metros having balanced service facilities, employment, and housing.

4. To develop for the region a transportation system compatible with the environment, using the available resources wisely, promoting the aesthetic beauty of the region, and avoiding undesirable environmental changes.

5. To develop a transportation system that is financially, legally, and politically feasible, has broad public support, and has a commitment to its implementation by elected officials and those providing transportation services.

In conjunction with these overall goals, the 1978 RTP establishes four quantified objectives for the regional transportation system:

- Reduce emissions attributable to the transportation system equivalent to a reduction of vehicle miles traveled of 5% in each five-year period from 1980 to 1995.

- Reduce fuel consumption by the transportation system equivalent to a reduction of vehicles miles traveled of 5% in each five-year period from 1980 to 1995.

- Increase transit ridership, currently 3.36%, to 6% of person trips in the region by 1990.

- Increase the number of multi-occupant light-duty vehicles (i.e., carpools, vanpools, etc.) currently 2 million, to 3 million by 1990, for both work and non-work trips.

B. POLICIES AND ACTIONS

The Plan suggests various means of attaining the region's transportation objectives. These take the form of <u>policies</u> and <u>actions</u> which guide decisions on the following elements of the system: automobiles, public transit, airports, non-motorized modes, highways, maritime, and railroads.

The basic theme running through the Regional Transportation Plan's policies and actions is that of "improved system management." In each section, actions are divided between transportation system management and system development.

Transportation system management proposals encourage better use of the existing system by increasing its people-carrying capacity. Measures include ridesharing (carpools, vanpools, transit), and increasing air-carrier load factors. System management methods have lower capital cost than system development strategies, and usually can be implemented more quickly.

System development proposals include construction of new facilities such as roadways, rapid transit, expanded ports, and new airports. The costs of system development (e.g., capital construction) have increased much faster than revenue from local, state, and federal sources. This makes system development harder to finance than ever before. Since our already extensive system costs more and more each year just to maintain and operate, we should plan further development only when the system we already have cannot be made to meet our needs.

1. Multi Modal Program Development

The multi-modal section describes three specific planning approaches that transcend most of the transportation modes:

- o Transportation System Management (TSM),
- o Ridesharing, and
- o Air Quality Management.

Each planning approach leads toward attainment of the goals adopted by the region. For example, TSM attempts to make the most out of the system we have by improved management and operational efficiency. The Ridesharing Program tries to maintain mobility without adding more cars to the roads. The air quality management planning activities seek to improve air quality -- in part, by reducing the pollution caused by transportation.

Understanding the integration of these strategies throughout the plan is important, since many actions support all three programs. For example, providing exclusive lanes for transit, vanpools, and carpools is basically a strategy that encourages ridesharing. However, when two or more people who once drove separately share a vehicle, there is also less congestion and vehicle pollution. Thus the exclusive lane also meets the aims of the transportation management and air quality approaches.

A Ridesharing Plan and an Air Quality Maintenance Plan are scheduled for adoption and amendment into the RTP in the late fall of 1978.

2. Automobile Policies and Actions

On the average, Southern Californians make over three trips a day -- 96.6% of them by car. In fact, we have become accustomed to driving everywhere, often using our cars when we don't really have to. All these trips add to air pollution, traffic and energy consumption. To meet our clean-air and fuel-conservation objectives, we must learn to use our 5-1/2 million automobiles more wisely.

We have to examine how much each of us contributes to the problems, and see where we can cut back. For example, the RTP recognizes that automakers have a responsibility to develop clean-burning engines that use less fuel. But it also recognizes that we cannot meet the federal air-quality standards through cleaner engines alone. We will simply have to drive less, particularly as the population increases.

The RTP supports ridesharing to maintain mobility, reduce congestion, clean the air, and reduce consumer costs. Mandatory inspection and maintenance of light-duty vehicles (cars, vans, small trucks) is endorsed to ensure that engines don't waste gasoline or dirty the air.

3. Transit Policies and Actions

Over a million of the region's residents ride transit every day, especially for home/work trips at peak hours. The SCAG region has a number of different forms of transit, including fixed-route bus service, dial-a-ride, and some charter bus service. Paratransit service (taxis, vans) is provided by many private operators, and some local governments supply specialized services to the elderly and handicapped. AMTRAK offers rail transit between Los Angeles and San Diego.

About 850,000 people use the buses of the Southern California Rapid Transit District daily, while over 60,000 use the Orange County Transit District service. The remainder use transit provided by other counties or by cities, or services such as dial-a-ride, taxis or vans, and Amtrak.

Despite these impressive numbers, only 3.36% of daily trips are made on transit. The RTP proposes to increase this number to 6% -- which would help to cut down vehicle miles traveled.

To attract new riders, SCAG proposes various measures to improve and increase transit service -- for example, better coordination among transit operators. Transit service standards and policies have also been adopted to help improve service levels and lower costs. In addition, a revised SCAG/Public Transit Operator Memorandum of Understanding has been implemented this year.

The Plan supports preliminary work on the Regional Transit Development Program. This program initially calls for the establishment of an areawide bus-on-freeway system; construction of a people-mover system in downtown Los Angeles; and development of a grade-separated rapid transit facility running from downtown Los Angeles through North Hollywood.

The Plan also supports future transit improvements in counties other than Los Angeles, where consistent with the Regional Transit Development Program. Further, the Plan supports preliminary engineering for an exclusive transit guideway in Orange County, and transit improvements in the Los Angeles/San Diego corridor. Also urged is the expansion of the region's local service fleet by several hundred buses over the next five years.

Policies aimed at better service for the elderly and handicapped would increase the number of transit vehicles easily boardable and usable by the infirm. Transit passengers' safety and security needs would be met through such measures as improved physical planning, procedural guides for transit employees, and improved communication equipment.

4. Highway Policies and Actions

The region's vast network of highways moves more people and goods than any other segment of the transportation system. Drivers reach most destinations quickly and easily on the 1,455 miles of freeways and 2,282 miles of conventional state highways in the region. But the system has growing problems.

More and more vehicles are using the highway system, creating congestion, adding to air pollution, and consuming growing amounts of our precious energy supply.

To cope with these problems, the Plan advocates both transportation system management (TSM) measures and further system development. TSM measures are favored over system development wherever possible, due to their lower capital costs and greater ease of implementation. Specifically, the RTP recommends that highway projects be funded in the following order of priority: 1) maintenance and rehabilitation, 2) operational improvements, 3) new construction.

The RTP urges that Caltrans implement projects necessary to maintain and rehabilitate the system, or to make it safer. To ease congestion, the RTP supports traffic-operations improvements such as synchronized signals, improved striping, and upgrading of routes that can serve as alternatives to freeway travel. In addition, SCAG supports the increased use of high-occupancy vehicles (buses, carpools, vanpools) to reduce pollution and energy consumption. The Plan recommends that such vehicles receive preferential treatment on the highway system, including special reserved freeway lanes and bypass facilities at metered on-ramps.

In terms of system development, the RTP urges completion of missing links and new construction. Within the region's freeway system there are several "missing links," which are gaps between two completed portions of a freeway, expressway, or major route. The RTP recommends that such unfinished projects be completed where these projects would be less than six miles in length and their construction would allow for continuous travel in an established corridor.

In addition to missing links, there are numerous areas in the region where new freeways or major upgrading may be needed. Potential highway-system projects, now being evaluated, will be priority-ranked for possible construction in the future.

5. Airport Policies and Actions

One out of three persons who want to fly in 1995 won't be able to, if the region's expected air-travel demand for 1995 is reached and our airports have not been expanded. The RTP recommends that all six of the region's major airline airports expand to the maximum capacity currently planned.

Many airports in the region cannot grow beyond certain limits due to regulations governing noise, environmental impacts, use of airspace, and so on. The proposed Palmdale International Airport could relieve much of the expected overcrowding.

The RTP recommends that land around new airports (such as Palmdale) be planned for uses compatible with airport operations, and that all areas which benefit from new facilities share in the costs of building them. Plans for new or expanded airport facilities must, of course, meet state and federal environmental standards.

Another worsening airport problem is ground access. One solution would be to process air passengers at remote terminals and then take them to the airports in group transport. The RTP recommends that such terminals be planned for and phased in as needed.

6. Non-Motorized Modes Policies and Actions

Southern California's climate allows a wide range of leisure pursuits. Many such activities -- walking, bicycling, horseback riding, hiking -- require trails or special lanes which are part of the transportation system. The RTP Non-Motorized Section concerns itself with these modes.

The initial policies deal primarily with bicycling, which could serve many of our trips. All of the counties and 80% of the cities in the SCAG region have developed plans for bikeways, and the RTP recommends that local governments encourage and promote greater bike use. For example, safe bicycle storage should be provided at all major destinations, and cities and counties should require bike-storage facilities in large public and private buildings. The RTP also favors modifying some streets and highways to provide bicycle lanes. These actions, and programs of biker/driver education and bike-law enforcement, should promote a safe environment for cyclists and encourage the enjoyment of this useful mode.

7. Maritime and Railroads

The SCAG region has three major ports -- Los Angeles, Long Beach, and Port Hueneme -- and is served by three major railroads. Except for AMTRAK, which provides passenger service within the region, both ship and rail modes carry mostly freight. Ports are public facilities which gear their operations to the demands of the private sector. While both rail and sea transport are privately owned, each has a considerable impact on public transportation facilities, since the freight they carry is at some point trucked on public highways. Each also has an effect on the region's environment. Thus both modes must be considered in a regional transportation plan.

While approving the ports' Master Plans for development to 1990, SCAG proposes to take a more active role in reviewing individual projects. It will do this by increasing its contacts with Harbor Commissioners and Harbor Districts, and by strengthening its review of projects' Environmental Impact Statements.

Working with AMTRAK to increase the level of passenger service in the Los Angeles/ San Diego travel corridor, SCAG will also support rail passenger service in other corridors as an alternative to long-distance commuting by automobile.

The connection points that ports and railroads have with other modes (especially highways) will be carefully considered in future RTP updates. Policy guidelines for incorporating rail, port, pipeline, and truck considerations will be developed in future regional plans.

C. FINANCIAL SECTION

The financial element of the plan presents a summary of existing sources of funds to provide transportation services and facilities in the SCAG region. Financial need for the future is then projected on three levels:

a financially constrained plan (below current service levels),

a maintenance of current services level plan (keeping service as is),

an unconstrained plan (expanding levels of service).

For transit, the implications of a financially constrained plan vary from county to county. In counties other than Los Angeles, moderate system expansion is possible even in the constrained case. However, in Los Angeles, if no added funds are found to support SCRTD's operations, further service cutbacks and fare increases will be necessary to maintain a balanced budget. The maintenance of current services level transit plan is higher than the constrained plan by the amount necessary to fund SCRTD's operations deficit.

The financially unconstrained transit plan incorporated all the system expansion envisioned by the Regional Transit Development Program. Although additional federal funds will be available for some of the added capital expenses, and fare revenues will be higher due to increased patronage, an additional $1,600-million will be needed to fund the program --an amount which could be raised by a 1/3 cent sales tax increase.

The financially constrained highway program is based on the assumption that the SCAG Region is able to obtain the legal maximum of capital improvements. The "expansion" unconstrained alternative calls for an additional $700-million in improvements. This sum could be raised by imposition of a 1.4 cent gasoline tax if all funds generated by the region were returned to it.

A financially constrained Streets and Roads program will not be adequate to fully fund maintenance and rehabilitation as shown to be needed in the maintenance of current services level plan. To continue Streets and Roads Programs at the historical level, maintenance/rehabilitation will require an additional $800 million, equivalent to a 1.6 cent gas tax increase.

impacts

V.
VI.

V. SIGNIFICANT ENVIRONMENTAL IMPACTS

This section contains an analysis of the 1978 RTP policies and actions which were identified as having environmental impacts. Using existing environmental impact reports and studies, this section discusses their potential level of impact within 18 separate environmental areas. These areas form the basis for the matrix and narrative contained in the section. The impact areas are as follows:

1. Agriculture, Vegetation, Wildlife - does the action in some significant way, change agricultural production, remove large amounts of vegetation and/or affect wildlife habitats and patterns?

2. Flood - does the action either significantly change water courses, or change the levels of risk of flood damage?

3. Earthquakes, and soil stability - does the action change exposure to risk levels due to earthquakes, or property damage due to moving earth (such as mudslides)? Also, does it change soil stability?

4. Water Quality - does the action increase runoff rates, create major spoil disposal problems, or in other ways significantly affect either runoff or water recharge areas?

5. Visual - does the action have a prominent visual impact?

6. Noise - does the action significantly change the noise levels adjacent to transportation facilities, or does the action change the numbers of people types of activities (land uses) exposed to given noise levels?

7. Land Use Patterns - does the action cause certain types of land use to be developed (e.g., residential, industrial, commercial, open space, etc.)?

8. Urban Form - does the action disperse or contain land use development (sprawl versus compact development)?

9. Accessibility - does the action change the travel time between locations by improving/expanding the transportation system?

10. Population Growth - does the action cause increased population growth in an area because of its implementation?

11. Direct Economic Impact - does the action cause immediate economic activity/spending (such as increased employment and/or construction-related expenditures)?

12. Taxes - does the action significantly change the amount of land on the tax roles, or will new taxes be needed to fund it?

13. Indirect Economic Effects - does the action cause a significant increase in property values, or other secondary economic activity which would not occur unless the action were completed?

14. Community Cohesiveness - does the action disrupt/divide a community, or provide a focus for a community?

15. Mobility - does the action increase people's ability to travel?

16. Safety - does the action significantly change the incidence of accidents)?

17. Air Quality - does the action affect the level of emissions from mobile sources?

18. Energy - does the action change the amounts of energy consumed by mobile sources?

In the summary impact matrix that follows, each action, or group of actions, is identified as having a significant, minor, or insignificant level of impact, and as either adverse or beneficial. The matrix shows the results of this regional impact analysis. Our evaluation of these impacts may change as more information regarding the project becomes available. Of course, the likelihood of significant impacts is much greater for most actions and projects at the local rather than the regional level.

For several of the summary matrix impact areas, only the magnitude and not the type of impact is indicated. This is because of the subjective nature of ranking impacts in these areas (e.g., visual, population growth, land use, and urban form). Please note that the matrix is a system-level evaluation and does not address the problem of various RTP policies/actions having both beneficial and adverse impacts. Further, this analysis is based on the best available data. Further information received during the review process will be incorporated.

The summary matrix is followed by a narrative that highlights the rationale for the rankings given to each of the 18 environmental impact areas. Included are references to the specific environmental studies and reports used for this analysis.

Environmental Impact Summary for the 1978 RTP

RTP Policies/Actions	Natural Environment						Land Use and Urban Form				Economy			Social			Air Quality		Energy
	Agriculture, Vegetation and Wildlife	Flood	Earthquakes and Soil Stability	Water Quality	Visual	Noise	Land Use Patterns	Urban Form	Accessibility	Population Growth	Direct Impacts	Taxes	Indirect Effects	Community Cohesiveness	Mobility	Safety	Emissions CO HC	NOx	Consumption
I Multi-Modal																			
Ridesharing																			
Vanpools/Carpools	N	N	N	N	N	N	M	M	MB	N	MB	N	MB	N	MB	MB	MB	MB	MB
Marketing	N	N	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	MB	MB	MB	MB
TSM																			
Ramp metering/bypass lanes	N	N	N	N	N	N	M	N	N	N	SB	N	MB	N	MB	MB	N	N	MB
Exclusive lanes	N	N	N	N	N	N	M	N	N	N	SB	N	MB	N	MB	MB	N	N	MB
II Auto																			
Inspection/Maintenance	N	N	N	MB	M	N	N	N	N	N	MA	N	MB	N	N	N	SB	SB	MB
VMT Reduction Measures	N	N	N	N	N	MB	M	M	M	N	N	N	N	N	MB	MB	MB	MB	MB
Off-Road Mobile Source Emission Reduction Measures	N	N	N	N	N	N	N	N	N	N	MA	N	MB	N	N	N	MB	MB	N
III Transit																			
RTDP: Downtown People Mover	N	N	MA	N	S	M	N	MB	MB	N	SB	S	MB	MB	SB	MB	N	N	N
RTDP: Regional Core Rapid Transit	N	N	MA	N	S	M	SB	SB	SB	M	SB	S	SB	MB	SB	MB	MB	MB	MB
RTDP: Bus-On-Freeway	N	N	N	N	M	N	N	N	SB	N	SB	S	MB	MB	SB	N	MB	MB	MB
RTDP: Local Transit	N	N	N	N	N	N	N	N	MB	N	SB	S	MB	MB	SB	N	MB	MB	MB
Paratransit	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	SB	N	N	N	N

Key

Magnitude
S: Significant Impact
M: Minor Impact
N: No Significant Impact

Type
B: Beneficial Impact
A: Adverse Impact

Environmental Impact Summary for the 1978 RTP

RTP Policies/Actions	Natural Environment						Land Use and Urban Form				Economy			Social			Air Quality		Energy
	Agriculture, Vegetation and Wildlife	Flood	Earthquakes and Soil Stability	Water Quality	Visual	Noise	Land Use Patterns	Urban Form	Accessibility	Population Growth	Direct Impacts	Taxes	Indirect Effects	Community Cohesiveness	Mobility	Safety	Emissions CO HC	NOx	Consumption
Commuter Rail	N	N	N	N	N	N	M	M	MB	N	MB	N	MB	N	MB	N	N	N	N
Transit Service Policies	N	N	N	N	N	N	N	N	MB	N	MB	MA	N	N	MB	N	N	N	N
Full Accessibility (E/H)	N	N	N	N	N	N	N	N	MB	N	MB	MA	N	N	MB	N	N	N	N
IV Highways																			
New Facilities Program	MA	MA	MA	MA	M	MA	S	M	SB	N	SB	S	SB	N	SB	MB	MB	MA	MA
Maintenance and Rehabilitation Program	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	N	N	N	N	N
Operational Improvements Program	N	N	N	N	N	MB	M	M	MB	M	MB	N	MB	N	MB	MB	MB	MA	MB
Local Assistance Program	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	MB	MB	N	N	MB
V Aviation																			
Improved land use compatibility around airports	N	N	N	N	N	MB	MB	N	N	N	MB	M	MB	N	N	MB	N	N	N
Expansion of LAX and Ontario International Airports	M	M	M	M	M	MA	MB	N	MB	N	SB	M	MB	M	MB	MA	SA	SA	SA
Development of Palmdale International Airport	MA	MA	N	N	S	MA	S	M	SB	S	SB	SB	SB	MB	MB	MA	SA	SA	SA
Improved ground access	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	MB	MB	MB	MA	N
Development of remote passenger terminals	N	N	N	N	M	N	M	N	MB	N	N	N	N	N	MB	N	MB	MB	MB
Expand general aviation system in conformance with RTP Five Year Capital Improvement Program	N	N	N	N	N	MA	N	N	MB	N	MB	N	MB	N	MB	MA	MA	MA	MA

Key

Magnitude
S: Significant Impact
M: Minor Impact
N: No Significant Impact

Type
B: Beneficial Impact
A: Adverse Impact

Environmental Impact Summary for the 1978 RTP

RTP Policies/Actions	Natural Environment						Land Use and Urban Form				Economy			Social			Air Quality		Energy
	Agriculture, Vegetation and Wildlife	Flood	Earthquakes and Soil Stability	Water Quality	Visual	Noise	Land Use Patterns	Urban Form	Accessibility	Population Growth	Direct Impacts	Taxes	Indirect Effects	Community Cohesiveness	Mobility	Safety	Emissions CO HC	Emissions NOx	Consumption
VI Non-Motorized																			
Increased bicycle use/ facilities	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	MB		N/ MB	N/ MB	MB
Increased pedestrian facilities	N	N	N	N	N	MB	N	N	N	N	N	N	N	N	N	N	N	N	MB
VII Maritime, Railroads																			
Adopted local Master Plans for expansion of the Ports	MA	N	N	MA	M	N	N	N	N	N	SB	N	SB	N	N	MB	MA	MA	MA
Support additional passenger rail service (including station improvements/ additions)	N	N	N	N	M	N	N	N	MB	N	SB	N	MB	N	MB	MB	MB	MB	MB
VIII Financial																			
Increased state gas tax	N	N	N	N	N	N	N	N	N	N	MA	MA	MA	N	MA	N	MB	MB	MB
Promote flexible use of funds	N	N	N	N	N	N	N	N	N	N	MB	N	MB	N	MB	N	N/ MB	N/ MB	MB

Key

Magnitude
S: Significant Impact
M: Minor Impact
N: No Significant Impact

Type
B: Beneficial Impact
A: Adverse Impact

1. Agricultural, Vegetation and Wildlife

The 1978 RTP will not have a significant cumulative effect on these components of the natural environment. There will be some significant localized effects associated with specific projects in the aviation and highways sections of the RTP.

Construction of the Palmdale International Airport (PIA) will force a loss of 2,140 acres of land now in agricultural uses. The expected development of an additional 26,500 acres for urbanized land uses will also reduce the current wide variety of vegetation and animal habitats and thus species in the Palmdale-Lancaster area. Fewer species will remain and the protected species of the golden eagle, prairie falcon, desert tortoise and the rare Mojave ground squirrel will be further threatened. Those species generally left will be the predator species, omnivorous eaters and the scavengers. Many of the smaller animals will be sensitive to the general uses by man and will disappear or move to the more remote parts of the site and beyond. The PIA project will have a more significant effect on the Palmdale-Lancaster natural environment than the other proposed RTP projects. This is due to the high desert environment being very sensitive to ecological disturbance and the other RTP projects having less impact and/or affecting already urbanized land.

Secondary effects of PIA construction will include increased urban growth in support of the facility that will impact the area's flora, fauna, soils, and hydrologic patterns.

Expansion of runway and terminal facilities at Ontario International Airport will have minimal direct effect on the natural environment. Many of the animals found around the airport are part of an ecosystem already modified by agriculture and urbanization in San Bernardino County's West Valley. The animal population seems well adapted to conditions around the airport. Construction is likely to eliminate some very local populations while other animals may simply retreat to undisturbed areas nearby. Expansion of Ontario International Airport will have only very localized effects on plant life. Much of the vegetation destroyed by construction will be replaced through reseeding by man or by nature. Loss of vegetation at the site will somewhat decrease the wildlife food supply.

Secondary effects of the recommended expansion of Ontario International will be more significant. The airport is located in an area of San Bernardino County that is undergoing continuous urban development. As a result, the existing natural vegetation will continue to decrease in all reas (including the vicinity of the airport) in the West Valley. It is likely that development will ultimately result in complete disappearance of certain species of plant life. This development will also result in decreased amounts of agricultural land and natural open space. The proposed expansion of the airport will accelerate this development trend.

The 1978 RTP contains highway system development actions consisting primarily of state highway priorities as submitted by the appropriate subregional agencies. The projects are primarily operational improvements that will increase the efficiency of the total regional system.

This includes construction of the "missing links" in the system. Neither of these actions will affect all but very localized natural environments because most of the projects are in already urbanized areas. Although, construction on Rt. 86 and I-15E will have a more significant effect on the local environments through which they pass. There is also a high potential for secondary growth effects in the I-15E corridor which will cause further adverse impacts on the natural environment.

2. Flood

The occasional heavy rainfall which characterizes the Southern California rainy season generates rapid, high volume runoffs and requires flood protection. Over the last few decades significant gains have been made in flood control by construction of stork drains, flood control channels, retention basins and dams. The flood control system has worked well and efforts to improve it continue.

Most areas that are subject to flooding are in rural areas which present little hazard to manmade structures. Some flood hazard areas are in locations of recent developments such as in the Newhall-Saugus area, Simi Valley and Southern Orange County. Flood hazards which significantly threaten urban areas are located along the Santa Ana River. A large area near Colton is subject to flooding as well as the entire river south of Prado Dam (near the Orange County line).

Impacts associated with transportation improvements deal primarily with the problem of storm runoff. The impact of highway construction and/or widenings in urbanized areas is minimal as storm runoff is at a maximum (i.e., the I-105 Corridor). A minor adverse impact will occur in the less urbanized and/or rural areas as a result of increased storm runoff.

The development of airport facilities will increase the amount of impervious ground surface, and thus increase runoff. This increases the potential adverse impact of heavy rains on the drainage system and ground water recharge system around the airport. A good example is the proposed construction of the PIA along with the induced development of the areas around Palmdale-Lancaster. The Draft EIS for PIA indicates that if only minimal flood control facilities are built, then erosion and flood damage will occur. Costs for flood protection of PIA range from $15 million to $49 million.

The majority of the other aviation expansions are taking place in urban areas that lessen the potential for an adverse impact as described above.

3. Earthquakes and Soil Stability

Natural hazards such as seismic shaking and displacement, may affect the construction and safe operation of transportation improvements recommended in the RTP. There is a high probability that over time an earthquake of high magnitude will occur along one or more of the major faults in the region. Transit guideways and highways could be severely impacted where they cross an active fault. The detailed effects of an earthquake or landslide on any part of the regional transportation system are discussed in project-level EIRs. Examples of this work are referenced in the bibliography at the end of this report (e.g., Palmdale EIS, I-105 EIS, L. A. Downtown People Mover EIA, etc.).

Guideway systems are especially hazardous during an earthquake because the safe movement of the vehicle depends on continuous contact with the guideway. An earthquake can (depending on the epicenter, type and magnitude) cause a loss of guideway contact and threaten the safety of users of the facility. The environmental assessment work done for the Los Angeles Downtown People Mover project indicates this potential as a substantial adverse impact.

Erosion resulting from the RTP's highway-construction operations is mitigated by applying California Standard Specifications (January, 1975 - Section 7-1.01L Water Pollution) to the developers contract. This requires the contractor to prepare a comprehensive plan on erosion and water quality control. The plan must be approved by CALTRANS and adhered to by the contractor or work on the given project may not start. Long-range erosion can be controlled by effective landscaping. When root systems become established, slope areas will stabilize and reduce potential of massive erosion entering the aquatic environment.

4. Water Quality

Expansion of the Port of Long Beach will have some localized effects on water quality. Dredging activities, particularly where polluted sediments are involved, have the potential to significantly degrade water quality on a temporary basis. Dredging would also have a significant impact on benthic organisms and since these organisms form an important link in the food chain in the harbor ecosystem, any impacts will be passed along the food chain in the form of reduced food availability, concentration of toxic substances, etc.

Improved ground access to Port Hueneme will increase activity at this harbor. With more ships using the port intentional dumping and accidental spills are likely to increase, adversely affecting water quality and marine life in the harbor.

Continued development in the Los Angeles Harbor will result in the same problems with dumping and spills as with Port Hueneme. Of greater concern though is the type of cargoes that will be handled through the ports. Based on the proposed construction of the SOHIO terminal in Long Beach, the volume of oil passing through the port will increase significantly. In addition, the volume of hazardous materials coming through the ports is increasing, raising the danger of a small spill doing extensive ecological harm.

The major contributions that motor vehicles make to roadway matter are particulate materials from combustion, petroleum products, rubber and asbestos. These pollutants accumulate in greatest amounts on the areas closest to the roadway and during a rainstorm are washed into storm drains and eventually deposited into the aquatic environment. With the development of additional highway surface there will be an increase in the amount of runoff. This will be true of the amount of highway-related contaminants entering the drainage system. Potential contaminants from all sources including construction, maintenance and normal use of these highway projects are expected to be minor. A possible exception would be a major spill of hazardous material being transported on the highways. At present, the effects of roadway runoff from a highway on ocean waters is currently unknown.

5. Visual

Analysis of the impact on the visual environment deals with both the view of the project by the community and view from the project by the user of the facility. With highway construction the goal is bringing the project into visual harmony with the communities along the right-of-way. A depressed roadway allows existing vistas to be maintained while a freeway-to-freeway interchange is visible from a great distance and affects a large area. Major freeway projects cannot avoid having a prominent visual impact in their right-of-way. The development of a major new facility in a desert environment like Palmdale International Airport is a perfect example of a prominent visual impact. The degree of visual impact depends on the individual preferences of the viewer.

The proposed expansion of the Port of Long Beach will have a minor adverse impact due to the introduction of large storage tanks and silos that will disrupt vistas from various points along the Long Beach shoreline.

Other RTP projects that will have a prominent visual impact on localized environments include: the Los Angeles Downtown People Mover for its 2.67 miles of elevated guideway; transportation terminals/stations associated with the Regional Transit Development Program; construction of the SOHIO terminal and other harbor expansion; and development of remote passenger terminals for LAX and other airports.

6. Noise

The RTP contains policies, programs, and projects that will impact noise levels in localized areas.

For this discussion, noise will be defined as unwanted sound. A major source of noise in a residential neighborhood is vehicular traffic. Normal background noise in a quiet neighborhood fluctuates about 40dB. Human speech is 55-65 dBA, an automobile at 65 mph records 77 dB, and trucks reach 84 dB. Sources of vehicular noise include running engines and tire sounds on the road surface. Graphs of continuous noise readings near a highway show a diurnal pattern of noise peaks during the morning and evening rush hours, with an ebb to low background noise levels from 1 A.M. to 5 A.M. Absolute levels in a given location depend on what neighborhood sources exist, as well as volumes and speeds of traffic on nearby roads.

Both psysiological and psychological effects occur from excess noise. Through interference with task performance, masking speech, and disturbing rest, it can cause considerable annoyance; particularly for middle-aged and older persons and the physically and mentally ill. At levels of 40-45 dBA, there is a 10%-20% probability of a shift in the level of sleep, often resulting in sleep disturbance. Young children are also thought to be susceptible to noise stress, but few studies have been carried out with regard to this group.

Hypertension can be a primary effect of continuing noise stress. Those already suffering hypertension, atherosclerosis, chronic myocardial infarction, coronary heart disease, or schizophrenia are most susceptible to noise stress.

All transportation projects have an adverse impact by increasing noise levels during the construction period. Major new facilities like the I-105, Rt. 30 and the LA-DPM will result in a sudden increase in the noise levels adjacent to the new facility. At the same time though I-105's development will reduce noise levels along arterial streets due to traffic diversion. The sudden appearance of a new noise source like these projects will be perceived as far greater than if the same noise level gradually increased over a period of time. Public reaction to a sudden noise increase due to a new facility would be far more intense and critical than for a gradual one.

Any increase in traffic will also have a corresponding increase in traffic generated noise. The highway development program will have a slight increase on VMT. Coupled with the projected growth in vehicle numbers these projects will have a minor adverse impact on noise levels in the areas adjacent to the facility. A successful Ridesharing Program will increase the average vehicle occupancy and reduce the total amount of vehicles on the road. Generally speaking, less traffic will produce decreases in noise levels. Overall beneficial impacts are also expected with the LA-Downtown People Mover due to improved circulation and decreased congestion.

At present, LAX and other major air carrier airports in California are violating the State Regulation Title 4 Subchapter 6 - Noise Standards. They remain in operation through the State issuance of variances.

In 1995, Palmdale International Airport operations will result in no incompatible land use within the 65 CNEL noise boundary. This means that PIA will be in compliance with California Division of Aeronautics noise regulations. As well, the construction of new highways surrounding PIA and the resulting urbanization produced by the economic attraction of PIA will raise the non-aircraft ambient noise levels. During PIA construction there will be an increase in road traffic around the site, particularly in heavy, noisy diesel trucks along Route 138.

7. Land Use Patterns

The 1978 RTP will have a major effect on the region's land use patterns, especially in the urbanized areas. Included in the plan are system-management and system-development recommendations that if implemented will reinforce a pattern of land-use development supported by SCAG's regional goals and policies.

In order to help guide the development of land in the region, SCAG has adopted a broad set of goals and policies (SCAG-76 Growth Forecast Policy). The following is a summary of those relevant to transportation planning and developing land use patterns.

- To create metros which have a balance of service facilities, employment, and housing types.
- To ensure housing opportunities in proximity to jobs and daily activities.
- To encourage the maintenance of sound and viable residential neighborhoods and to increase the rehabilitation of blighted and declining neighborhoods.
- To assure a variety of economic opportunities within each of the major sub-units of the region consistent with its natural and existing resources and potential resources.
- Growth throughout much of the region should be of low density character, with specified urban areas experiencing higher density development in accordance with local and regional plans.
- Development within existing urban areas, rather than the urbanization of new land, should be encouraged as much as possible.
- To achieve a balanced distribution of open space throughout the region which meets the needs of inhabitants...and which will prevent some of the adverse effects of urban sprawl and other forms of inappropriate development.

- To preserve, wherever possible, the region's natural resources and desirable land uses, particularly prime agricultural lands.

The 1978 RTP supports these "metro" oriented goals and policies in several ways. By improving intra-urban circulation, redevelopment and intensification of development will occur in existing urban areas.

Improving transit service in activity centers like the Los Angeles Downtown People Mover is anticipated to increase the internal circulation, generate increased use and intensify development. This finding was confirmed in a report prepared by the Los Angeles Community Redevelopment Agency titled, Summary Environmental Impact Assessment and Responses to Issues (August 1977). In the impact ection of this report they conclude that construction of the LA-DPM would have a substantial beneficial impact on land use, business and industry and existing activity centers within the project area.

A number of the highway construction projects will have a substantial impact on land use patterns surrounding the given project. The RTP recommends construction of I-105 as a freeway transitway with ramp metering and bypass lanes. Volume I of the Final Environmental Impact Statement for the Proposed Routes 1 and I-105 (July 1977) indicates the project will intensify residential development predominately in multiple-family units. Based on the fact that regional accessibility is more pronounced near freeways, this future residential development will likely occur at locations proximate to the I-105 project. This fact also holds true for the future commercial and industrial development in the project corridor. The majority of this future potential development will probably be industrial in nature and will locate primarily within the eastern and western ends of the corridor. Expansion of the Los Angeles International Airport along with circulation improvements will help influence commercial intensification in the western portion of the corridor (El Segundo).

Other land use effects are recommended in the Aviation Section of the plan. It states that land around LAX and Ontario International Airport should be purchased according to the criteria of the California (or superceding federal) noise regulations. Implementing this action may displace residential, commercial and/or industrial development while establishing this noise buffer zone. In contrast, improving ground access and priority considerations for transit at these airports may encourage the intensification of airport-related land uses.

Construction of the Palmdale International Airport (PIA) will have a significant impact on the surrounding land use. The PIA Amended Draft EIS - Volume One (July, 1976) states that the major land use will be for residential purposes, with 13,500 acres utilized with PIA and 8,300 without the airport.

8. Urban Form

The regional impacts of the RTP will be evaluated as to the extent the plan will shape and direct the urban form of the region. Overall, while not significantly changing the residential densities in the region, the RTP will act to limit sprawl through continued provision of transportation facilities (both for auto and transit users) within the urbanized areas in most cases before orderly expansion to adjacent areas. The highway priorities of the RTP are first maintenance of existing facilities. Second complete missing links; and then orderly expansion. Transit is given a similar hierarchy of priorities, providing together with the highway priorities a strong emphasis on the transportation infrastructure to the urbanized areas.

Some specific projects will have more noticeable impacts than others./ The Los Angeles Downtown People Mover (DPM) and Wilshire corridor transit system will allow for improved mobility in the Los Angeles Central core and in the Wilshire corridor. The I-105 freeway will provide major congestion relief for the east-west traffic in Southwest Los Angeles, and improve access to Los Angeles International Airport. Completion of Routes 30 (Foothill Freeway) and 118 (Simi Freeway) will allow for continued orderly expansion in the Pomona and Simi Valleys, adjacent to contiguously urbanized areas.

Some of the actions in the RTP may have minor adverse impacts on urban form, for example, ramp metering and other congestion improvements will allow for longer commutes. Vanpooling, carpooling, and long-haul commuter-bus and rail improvements may also allow some step out development. This should not have a major impact because the relatively longer distances (and travel times) will cause people to tend to live closer to employment opportunities.

9. Accessibility

Accessibility is a characteristic of the transportation system itself. It describes where the system goes, when it operates and the travel time required to reach any area served. Using this definition, any addition and/or improvement to the existing system would have a beneficial impact for destination accessibility. This would include all the highway construction and improvement projects listed in the 1978 RTP.

Expansion of the transit system as outlined in the four-element Regional Transit Development Program will also increase access. There are special problems for the handicapped and disabled who are denied access to vehicles because of barriers in the design. To help address this problem, the Southern California Rapid Transit District has acquired 200 lift-equipped, "kneeling" buses, the first such vehicles to go into urban service in the country. In addition, SCAG has prepared uniform planning guidelines for development of local plans by the region's transit system operators. These short-range transit plans contain special consideration for elderly-handicapped groups.

Development of Palmdale International Airport, expansion of LAX and the other capital improvements to the regional aviation system will greatly expand accessibility to this mode of transportation. Remote passenger terminals for LAX and other major airports will also expand accessibility.

Management improvements to the transportation system (e.g., ramp metering/ bypass lanes, etc.) can relieve congestion in the system and increase access by reducing the total travel time. VMT-reduction measures also lessen congestion and thus improve access.

10. Population Growth

Two types of growth are associated with this discussion of impacts: population growth (increases in total regional population) and economic growth (increases in total regional income or product). Both of these involve changes in the region's spatial distribution of population and economic activities.

The RTP will, to some degree, impact both population growth and distribution in the SCAG region, and in the subregions. Without the RTP's maintenance and improvements to mobility, the urban area, and possibly the entire region, could inevitably lose population and employment. Changes in spatial distribution of economic activities generally occur in 1) areas that are rapidly developing, 2) locations of new large-scale transportation facilities, or 3) areas undergoing substantial renewal. The RTP will cause the construction and expansion of freeways, highways, transit and rail networks, airports, and other transportation facilities and activities, which will impact populationd land use, growth and distribution.

The RTP is based on providing the infrastructure needed to implement the regional development guide. The Downtown People Mover and other Regional Transportation Development Plan components will aid in the recycle and continued development of the urban core, while many of the new and/or expanded transportation links will allow the population to have access as it grows, in conformance with regional and local growth policies.

Some of the typical impacts include expansion of Ontario International Airport and construction of I-15E will accelerate the trend toward rapid development in western San Bernardino and Riverside Counties. The new Palmdale International Airport will attract people and economic activity to the Palmdale area.

11. Direct Economic Impacts

The 1978 RTP contains numerous projects that will generate direct economic activity and major expenditures. This section will note the projects for each transportation mode and detail some of the direct economic impacts.

Capital investments in transportation will generate jobs for constructing and operating the system. These jobs, in turn, will induce other employment both within and outside the region. Jobs required for construction of the system are only temporary. These jobs should be related to prior employment levels to determine whether they represent a net gain or loss. The 1977 RTP emphasizes maintenance and operational improvements over new facility construction. Consequently, the net effect on the construction sector of the economy will be a reduction. This means that the construction jobs associated with a particular project, such as I-15 in the San Bernardino County, cannot be considered to be new or additional jobs from a regional perspective. It should be noted that the increased level of spending for transit will offset some of the employment losses incurred through shrinking highway construction.

The operating jobs generated by transit system and airport expansions can be considered a permanent addition to regional employment levels. Uncertainties in funding sources and operating levels preclude any definitive estimation of future employment levels.

The majority of expenditures for public transit is contained within the Regional Transit Development Program. Projected capital expenditures for the four element program (1979 to 1990) total over $4.5 billion. Of this total nearly $2.0 billion will go for development and construction of the LA-DPM ($165 million) and regional core rapid transit system ($1,757.6 million). These projects will provide direct employment for construction as well as operation.

Highway system development as projected in the 1978 RTP will involve large expenditures of funds. Construction of the I-105 17 mile project will cost $457 million and is the costliest project planned. Another major project is construction of the Route 7 link between Route 10 and Route 210. This will cost $128 million. All other projects are under $40 million with the exception of Route 55 ($59 million) I-15 ($102 million) and Route 30 ($25 million). These projects will stimulate direct employment mainly during the construction phase. Maintenance of the new facilities will also require additional employment.

Development of the Palmdale International Airport will have a major direct economic impact on the Palmdale/Lancaster area because of the relatively low level of population and development. Construction costs are estimated to be $415-500 million. This includes land purchase, facilities and an access road from the freeway. During the various construction phases there will be an annual average of 821 jobs in 1980-90 and 642 in 1990-95.

Aviation expenditures are noted in the 1978 RTP with Table 6.5-3 showing the five-year capital improvement for SCAG region's airport operators. The major expenditure projected is for expansion of LAX's airfield area, passenger terminal area, ground access facilities buildings, and land acquistion totaling over $440 million. Land acquisition for Hollywood-Burbank airport is projected at a cost of $51 million. The other significant project is expansion of the airfield and passenger terminal area of Ontario International Airport ($34 million). For all airports, the total projected expenditures for FY1980-1984 is over $670 million.

Establishing a vehicle inspection/maintenance program would have a direct adverse impact on the vehicle user in the form of increased operational costs. The Air Resources Board estimates that the average cost of repairing a vehicle failing inspection will be $17. Extending emission controls to off-road mobile vehicles would also affect the user directly.

12. Tax Impacts

The RTP will impact taxes in several ways, as it will impact services. Most of the recommendations under the State Highway Financial Action Program will result in no changes to the amount and sources of taxes, but will increase the amount of tax dollars. These actions include:

- Support decreases in federal gasoline tax allowing state increases without additional taxpayer burden.

- Seek a region-wide return of at least 50% of the revenues generated for capital outlay on state highway and related transit improvements.

Based on highway projects submitted in the RTP, an increased gasoline tax during FY '79-FY '88 of between 1 and 2 cents/gallon would be required to meet this construction. This level of tax increase would raise between $650 and $885 million. Sensitivity testing indicates that this relatively low increase in gasoline tax would have little impact on reducing travel, and cost the average car operator about $10/year. The tax could have cumulative impacts if federal action is taken to increase the price of gasoline, or if the world price of petroleum rises significantly faster than the consumer price index and wages.

If passed, the Jarvis-Gann initiative will complicate the funding picture for transportation in the region. The initiative may preclude providing local matching funds derived from property taxes which are necessary for local governments to receive state and federal transportation dollars. Sales taxes are another major source of revenue for local transportation systems. The Jarvis initiative requires a two-thirds voter majority to impose any new taxation at the local level. This would severly restrict local government's ability to raise revenue, and would probably preclude expansion of transit through a sales tax ballot measure. Construction and maintenance of streets and roads is financed amost 50% by local property taxes. Local programs would have to be curtailed to meet the budgetary constrainst imposed.

The other area of tax impacts of the RTP is the Regional Transit Development Plan. This portion of the RTP will require an additional $345.3 million in local and/or state funds for capital construction, and $271.4 million in annual operating funds from sources not currently identified. The RTP suggests a 1/3 cent sales tax increase in Los Angeles County. If this tax is implemented, it probably would not have major impacts on the financial wellbeing of the county, and cause only minor variations in shopping patterns in the areas adjoining the other counties in the region. As Arthur D. Little, Inc showed on report Possible Impact of Sales Tax Rate Differential on Retailing Activity in Los Angeles County (Oct. 1974), people are unlikely to drive any distance to save 33 cents on a $100 purchase. A sales tax on necessities will create an unequal burden for the poor.

In summary, the RTP could cause an increase in taxes in the region, while increasing and/or maintaining the existing levels of mobility.

13. Indirect Economic Effects

The 1978 RTP policies, programs and projects will stimulate economic growth by increasing the efficiency of people and goods movement, providing new room for growth and expansion, expanding labor and consumer markets, expanding labor opportunities such as jobs and recreation, and improving the region's image. The 1978 RTP will enhance economic development by improving ground access at airports (e.g., LAX) and harbor facilities. It will also expand economic development in western San Bernardino County in the vicinity of the expanded Ontario International Airport and in the I-15 corridor. The development of Palmdale International Airport will similarly stimulate economic activity in the area. Expanded public transit operations through the addition of buses and new transit systems will tend to reduce congestion in the areas served. This will aid goods movement and expand opportunities in these areas. Construction of the transportation facilities would disrupt local businesses. Temporary street closures and impaired access may result in decreased profits, or even relocation. If no additional highways are built, the resulting congestion may act to constrain economic development.

The proposed fixed-guideway systems would raise the value of land adjacent to the right-of-way. As found in other areas with similar systems, land values should increase around stations where development is already relatively intense. Areas along the right-of-way, especially resential sections, could suffer a relative decline in value. Values of retail and office space around stations would have the greatest gains since accessibility is more important to these activities. These gains might be offset by land value declines elsewhere in the region, however. Land removed from tax rolls will be minimal.

Transportation infrastructure can be a major factor in determining future growth if it is inadequate to meet the demands of expanded economic development. Simi Valley, for instance, may become directly competitive with much of the western San Fernando Valley as an industrial site if the missing link in the Simi Valley Freeway is completed. Major expansion in shipments of agricultural produce through Port Hueneme will be possible if Route 126 is upgraded between Ventura and Santa Paula. Continued rapid development of southeastern Orange County will stress the capacity of the existing freeway system and eventually become a disincentive to locating there.

There is general agreement that the region's existing transportation system will, with minor additions, be the system serving the region in the 1990s. The greatest potential transportation impact on the region's economic development will occur in those rapidly developing areas where the existing system will not be adequate to handle projected demand. In these areas, growth may be below anticipated levels and deflected bacl to those with additional capacity.

14. Community Cohesiveness Impacts

The RTP will have some direct impacts on community cohesiveness. Typical of these impacts is the division of a neighborhood by a freeway. The expansion or creation of a major highway or freeway can remove residences and stores and create both physical and psychological barriers to travel. Examples of this type of impact are Route 7 (South Pasadena) and Route I-105 (Century Freeway).

The Transportation Plan will also have positive community cohesiveness impacts. The Regional Rapid Transit Core (Starter Line) could serve to focus more community identification to communities/ neighborhoods adjacent to stations. Improved access to a community can also strengthen community cohesiveness and provide some community identity. The Simi Valley freeway (Route 118) has served as a major focus for not only Simi Valley, but several communities in the northwest San Fernando Valley.

Major facilities, such as airports, harbors, and railroad lines serve as focal points for industry and commerce, as does highway access to such areas as the Irvine Industrial Park, which has both an airport, and direct access to several freeways.

Finally, transportation facilities can serve to help form communities. By serving as definite barriers, a neighborhood or community can have a physical and psychological barrier which residents and non-residents of the communities easily recognize.

15. Mobility

The social character of the region is in part molded by its degree of personal mobility. Mobility is a user characteristic that concerns the ability of the user to take advantage of available transportation services. The region's current transportation system provides a high degree of mobility for those that can afford to own and operate a private automobile. Those able to take advantage of this system can also increase their socioeconomic mobility. As the effective range of system utilization expands, the user has an expanded range of job opportunities, housing locations, leisure activities, etc. Those excluded from using the system are disadvantaged by comparison.

Improved regional mobility through improvements in transportation will tend to enhance the region's social environment by expanding lifestyle choices for the region's residents. Expanded transit services will make existing employment and recreational opportunities more accessible to transit users while offering automobile users an alternative means of transportation.

Continued maintenance and rehabilitation of the highway system will ensure availability of the system to those capable of using it. The personal mobility of highway users and on-highway-transit users increases to the extent that the highway recommendations and traffic management strategies (such as ramp metering) reduce highway congestion -- resulting in time savings.

The personal mobility of automobile users will be directly impacted by increased gasoline prices. A survey of the literature indicates that doubling the price of gasoline (in constant dollars) will result in a 15% reduction of VMT.

Expansion of the regional bus fleet, additional bus routes, and increased frequencies will affect all groups but, with proper attention to routing, can benefit the lower-income groups most because of their dependence on public transportation. Bus operations in preferential lanes on freeways are aimed at metropolitan level trips of 4-20 miles. These transit improvements will benefit middle-income groups by making transit a more viable option for home-based work trips. The plan's recommendations concerning transportation services to the elderly and handicapped will result in increased personal mobility for that transit dependent group.

Development of the Regional Core Rapid Transit Line and line-haul transit improvements, supported by expanded local transit feeder and distribution systems and park-and-ride facilities, will improve accessibility and personal mobility in the transit corridors. Areas around transit stations and along bus routes that connect directly with transit stations will experience the greatest accessibility/mobility improvements.

The VMT reduction measures included in the Plan will reduce the personal mobility of automobile users. Analysis of the SCAG Transportation Air Quality Alternative determined that a 20% VMT reduction, combined with the other traffic management strategies, could reduce total automobile trips. This represents a relatively small decrease in personal mobility. The recommended transit improvements (bus acquisition, fixed-guideway service, paratransit, and activity centers) are intended to lessen this particular impact. However, higher gasoline prices or lessened transit service will most strongly affect the personal mobility of the poor.

16. Safety Impacts

The RTP will increase personal safety and decrease accident and injury ratios in the SCAG region. This will be the result of a large number of actions included in, or implied by the RTP.

The action most easily identified in the RTP which will improve safety is the transit policy that:

> SCAG shall encourage an awareness of safety and security through uniform sign regulations, procedural guides for transit employees, standardized incident-recording procedure, use of emergency communication equipment, and public information programs.

National safety performance statistics show that buses have 20 times as many passenger accidents per mile as auto, but over 30 times fewer passenger fatalities.

Several RTP policies and actions should reduce the accident rates noted above. The bus-on-freeway will reduce some of the surface street accident exposure which most buses now are exposed to. Preferential lanes will further reduce the areas of accident exposure. However, the Santa Monica Diamond Lane experienced a 150% increase in accidents over a period of 21 weeks (from 10 to 25 per week). As the bus fleets stabilize in numbers and drivers become more experienced (and the older buses in the fleets are replaced through the programs in the RTP), the transit accident rate is expected to fall.

Auto accidents should be held to a low rate of increase because of the 55 mile-an-hour speed limit, and improvements to the roads, streets, and highways including traffic flow improvements. The following table shows the changes in auto accidents in the past 20 years in the SCAG region. The RTP is expected to prevent a similar increase from occurring in the next 20 years.

Auto Accidents
SCAG Region

	1975	1955
Imperial	725	70
Los Angeles	59,931	27,375
Orange	12,515	1,198
Riverside	4,040	563
San Bernardino	4,820	918
Ventura	3,048	195
Regional Total	85,079	30,319

Source: CHP ANNUAL ACCIDENT REPORTS 1975, 1955

In general, accident rates increase with congestion. The RTP will act to reduce congestion and thus future accident rates by increasing both the regional highway network, and the local systems through the TIP and the Federal Aid to Urban and Secondary Systems.

The RTP will also have potential positive impacts on airport safety. It includes increased airport buffer zones, and increased compatible land uses adjacent to airports will reduce the hazards from aircraft crashes. In addition, improvements in the aviation element will increase instrumentation and provide for other facility improvements, which will increase the safety of aircraft operations.

17. Air Quality Impacts

The 1978 RTP will have significant impacts on regional air quality. The plan includes policies, programs, and projects designed to reduce air pollution. (These measures are discussed in the Mitigation Section of this report.) Even though the rate of grams per mile emitted from many mobile sources is being reduced due to technical improvements, the RTP calls for a reduction beyond that of up to a 20% "equivalent-VMT" reduction in mobile source emissions. Transportation will continue to be a major source of emissions.

table 35

Air quality is a property of the environment which ordinarily is measured by concentrations of various pollutants, and assessed with reference to a standard established on the basis of health or other effects. Of the five pollutants for which air quality standards have been promulgated, three are associated significantly (but not exclusively) with transportation:

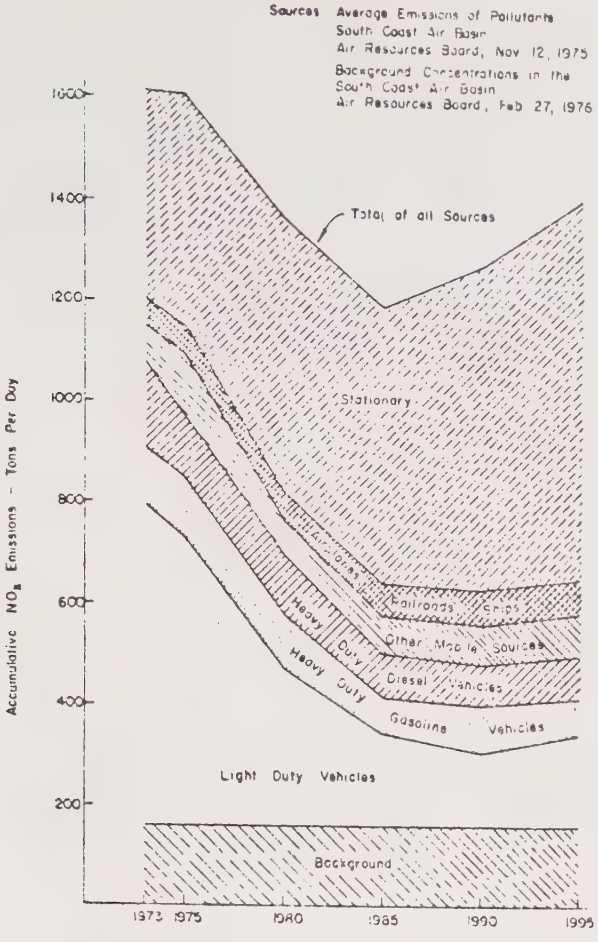
Carbon monoxide (CO)
Oxides of Nitrogen (NO_X)
Oxidant measured as ozone (O_3)

The two other pollutants for which standards exist are sulphur dioxide (SO_2) and particulates (measured as total suspended particulates, TSP). Although all are generated by mobile sources, at present only the first three named above are used in formulating the emission-reduction objectives of the RTP. Among these three pollutants, CO and NOx are emitted directly by vehicles, and accordingly are known as primary pollutants. Oxidant, however, results from chemical reactions in the atmosphere between the reactive components of evaporated and partially burned hydrocarbons as one group of constituents with NOx, which interact with the aid of sunlight. Hence, the emissions of concern relative to oxidant are the reactive hydrocarbons (RHC), as well as NOx.

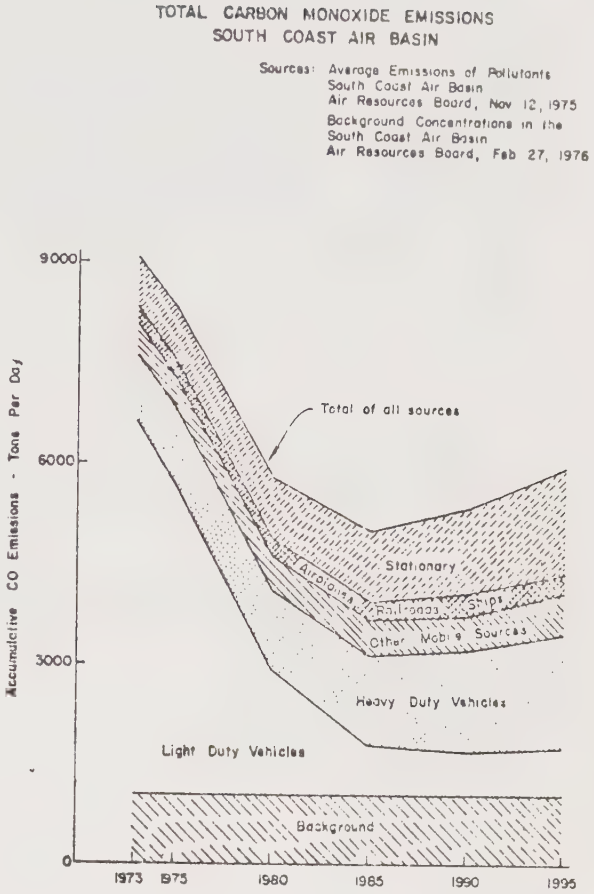
Oxidant concentrations constitute the most serious pollution problem in the SCAG region, and therefore received primary emphasis in efforts to improve air quality. To reduce oxidant concentrations, one approach is to achieve an overall reduction of the primary pollutants involved in its formation. The chief focus of oxidant-reduction programs has been on hydrocarbon reduction. For example, the EPA Transportation Control Plan for the Los Angeles region is expressed in terms of reducing hydrocarbon emissions from all sources. It must be borne in mind, however, that oxidant formation depends on the ratio between NO and NMHC in the atmosphere, as well as their concentrations. Consequently, substantial reductions of hydrocarbons alone will not necessarily accomplish oxidant reductions, unless appropriate changes are achieved in NOx emissions. However, within the emission-reduction objectives of the RTP, the ratio will not change significantly. As a consequence, much of the discussion that follows is couched in terms of hydrocarbons as the major index of polluting emissions.

Forecasting future emissions (and thus air quality) is a complex process. Sometime in the spring of 1978 an emissions forecast and air quality forecast will be adopted by SCAG, CARB, SCAQMD, and other appropriate local air quality planning agencies. The preliminary emissions inventory currently used for these purposes was prepared in 1975 by the South Coast/Southeast Desert AQMP policy task force. A revised inventory and forecast is being prepared and will be part of the final EIR. Until then, the emissions forecast shown in Figure 20 can be used for illustrative purposes. This figure emphasizes the declining contribution from automotive vehicles on the premise that emission controls are maintained during their lifetime (i.e, implies an inspection/maintenance program).

TOTAL OXIDES OF NITROGEN EMISSIONS
SOUTH COAST AIR BASIN



TOTAL CARBON MONOXIDE EMISSIONS
SOUTH COAST AIR BASIN



TOTAL REACTIVE ORGANIC GAS EMISSIONS
SOUTH COAST AIR BASIN

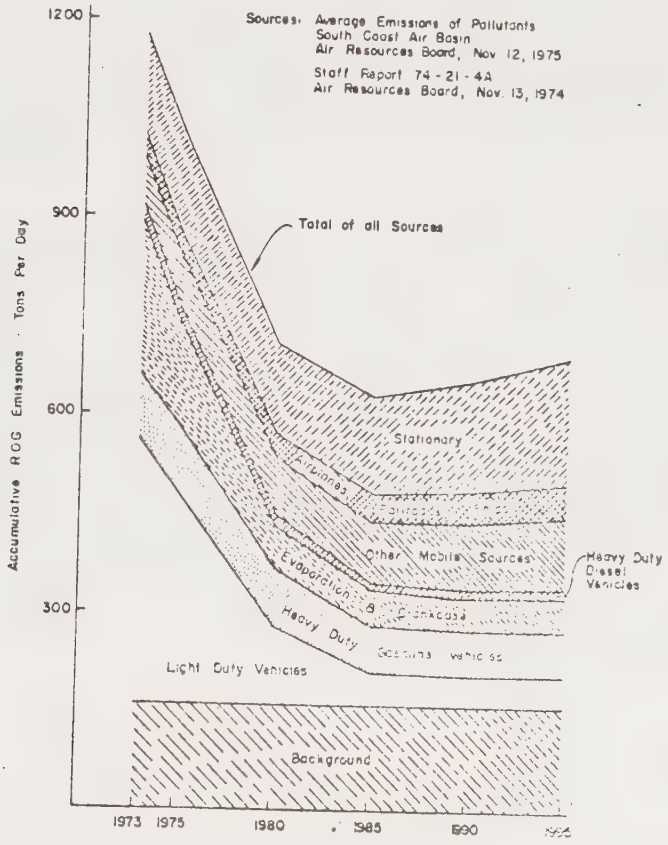


figure 20

The impacts of air pollution are becoming better known each year. Air pollution is a threat to both health and property. The health effects of pollution vary from person to person. Individuals with existing lung or circulatory diseases are most affected. Acute effects--e.g., respiratory irritation--can result from short exposures to relatively high concentrations of pollutants. By age group, air pollution most affects the very young and the aged. (Pregnancy adds to vulnerability.) In addition to immediate effects, there can be long-term effects from chronic exposure to low-level pollutants. In many instances, it appears that pollutants have more severe effects in combination rather than singly.

Some health effects of various pollutants are:

Oxidants:

- o Reduced resistance to infection of the lung
- o Interference with oxygenation of tissue in the lung
- o Aggravating effect on pulmonary function of persons with chronic respiratory disease, and on the incidence of asthma attacks
- o Statistically significant impairment of athetic performance.

Carbon monoxide:

- o Replacement of oxygen with CO in the blood stream leads to impairment of various central nervous system functions--e.g., estimation of time intervals, visual perception, psychomotor performance.
- o Suspected to be associated with heart problems (myocardial infarction)
- o Causes dizziness and fatigue.

Nitrogen Dioxide

- o Increases respiratory disease and respiratory irritation
- o Reduces children's breathing ability
- o Diminishes the blood stream at concentrations comparable with those found along freeways
- o Reduces resistance to viral and bacterial infections
- o Accelerates aging and chronic disease of the lungs

In addition, air pollution corrodes metal, discolors building materials and paint, weakens leather, fabrics and rubber, soils clothing, and reduces property values. In 1970, estimates of damage ranged as high as $5 billion for the region.

The RTP will impact air quality in many ways. Highway construction and other actions which reduce congestion and increase traffic speeds will reduce the CO and HC emission rates, although speed increases will cause an increase in NOx emissions thereby increasing the oxidant problem. For example, the air quality impacts expected from the I-105 project are extremely small (1% or less) except for CO in the corridor which will be reduced 15% to 25% with the project. There will be slight increases in NOx and CO at all impact scales.

Individually, actions such as ramp metering with bypass lanes, preferential bus and carpool lanes, and other High Occupancy Vehicle (HOV) tactics will have minor impacts on air quality. CALTRANS, in its assessment of ramp metering, suggests that the regionwide impacts of metering 800 freeway directional miles and 500 HOV bypass lanes and creation of enough carpools to cause a 700,000 daily VMT reduction will cause a pollution reduction of:

Pollutant	Tons/Day Reduction	% Total Basin Emission
CO	51	1.2% reduction
RHC	4.8	0.7% reduction
NOx	0.1	0.1% reduction

However, all of the Ridesharing measures, transit improvement measures, and traffic flow improvements in combination are projected to have a major and significant impact on VMT and air pollution. The objectives described in the draft Air Quality Alternative include an emission reduction equivalent to a 1.2% VMT reduction by 1995 for transit, a 3.5% emission reduction for Ridesharing, and 3% reduction due to improvements in traffic flow due to road improvements. Commuter rail and increased goods movement by rail and ship will decrease total projected emissions, however, the shifts at this time from autos and trucks is not expected to be very large. Airport improvements will cause increased air pollution emissions, until by 1980 aviation will be significant. For example, Los Angeles International Airport alone is projected to emit over 3.8% of all Carbon Monoxide emissions in the South Coast Basin, and 4.2% of the Hydrocarbon emissions. The RTP calls for improved controls, both technical and in aircraft operations, which will cause a decrease in these emissions. The Mitigation Section for air quality contains further strategies, tactics and measures designed to improve air quality by decreasing emissions.

In addition to those actions discussed above, the SCAG Air Quality Alternative (AQA) for the RTP proposes controls on off-road vehicles equivalent to a 3.4% VMT reduction. This action will be implemented through emission control on jet aircraft, towing of aircraft and other operational improvements, controls on activities of ships, especially oil tankers in the South Coast airshed, and conversion of trunk railroad lines from diesel to electric. The AQA also calls for reduced emissions from park management, voluntary trip reductions and substitutes, increases in vehicle operating costs, and trip reductions due to managed regional growth and the resulting balance of jobs, homes, shopping and recreation, causing shorter trip lengths.

18. Energy Impacts

The 1978 RTP will impact directly and indirectly the consumption of energy in the SCAG region, and the nation as a whole. The major causes of increased energy use will be increased construction of transportation facilities, and increased use of vehicles which in turn calls for increased propulsion energy.

The 1978 RTP includes over 750 new lane miles of freeway construction, and many miles of local streets and roads. In "Indirect Energy Consumption for Transportation Projects" prepared for CALTRANS, it was estimated that an average lane mile of freeway construction requires 38.2 X 10 kwht. This implies that over 28,650 x 10 kwht will be needed just to construct the freeway portions of the RTP, and total road improvements could require as much as 50 billion kwht. for construction.

Fixed guideway transit is also included in the RTP. A two-way guideway mile requires approximately 22.8 x 10 kwht. for elevated, 11.7 x 10 kwht for at-grade, and 51.4 x 10 kwht. for subway. In Los Angeles, the Wilshire Corridor to San Fernando Valley Guideway ranges from 8 to 18 miles. This could cause over 900 x 10 kwht. construction consumed for the regional core rapid transit system. Construction of the Downtown People Mover will be somewhat less energy intensive than the 22.8 x 10 kwht./m.k. however, still a significant level of energy expenditure will be needed.

A typical 200-plane general aviation airport requires almost 200 million kwht. for construction, and there are several facilities of this size in the RTP. All aviation improvements (except Palmdale) could total 100 million kwht.

The RTP will also cause some energy savings. These will occur because of fuel savings from reduced VMT caused by increased transit and "pooling" and technical improvements to the automobile. These savings will be continuing operational savings, and are the target of the RTP fuel conservation objectives. The assessment of the energy effects of the RTP is based upon the fuel conservation objectives of the plan shown in Table 37.

These objectives are based on forecasts of future transportation-energy consumption which take into account the fuel economy standards enacted by the federal government, together with the travel reductions which may be accomplished by the emission-reduction measures. It should be recalled that transportation fuel conservation requires a reduction of daily travel expressed as VMT reduction. This differs from air quality improvement, which in principle could be achieved through small reductions of total travel demand involving disproportionate amounts of air pollution (short trips) or by controlling additional types of sources (off-road vehicles). Hence, the fuel-conservation objectives of 1980 and 1985 are consistent with the emission-reduction objectives, as both are based on VMT reduction per se.

FUEL CONSERVATION OBJECTIVES
(MILLIONS OF GALLONS OF GASOLINE PER YEAR)

YEAR	PROJECTED CONSUMPTION OF FUEL BY LIGHT-DUTY VEHICLES	FUEL SAVINGS OBJECTIVE	PERCENTAGE SAVED
1980	5,270	263	5
1985	4,650	465	10
1990	4,240	424 to 636	10 to 15
1995	4,170	417 to 834	10 to 20

To achieve the objectives established for 1990 and 1995 probably will require a combination of VMT reduction and an increase in average fuel economy for the regional vehicle fleet greater than that mandated by the federal standards.

Such an outcome is likely to require a combination of higher prices for fuel combined with a substantial increase of public transportation for long-distance travel. Also, it must be recognized that the regional vehicle fleet has an average fuel economy greater than the national average, due to the concentration of small automobiles. This tends to make more difficult the task of further reductions of overall vehicle fuel economy, and calls for more detailed examination of measures required within the RTP framework to achieve the fuel-reduction objectives.

Some positive energy impacts will also be caused by increased reliance on more energy efficient goods movement (such as use of super tankers), and increasing passenger load factors on commercial flights. Finally, some increase of state gasoline tax could cause a decrease in energy consumption in the transportation sector.

table 37

VI SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS WHICH CANNOT BE AVOIDED

This section discusses the adverse impacts of the 1978 RTP that cannot be avoided, including those that can be reduced as a result of mitigation measures incorporated in the plan. As discussed in Section V, adverse impacts may result from the RTP's transportation improvements and transportation management strategies. Adverse impacts can be either temporary or permanent. In many cases, careful planning and appropriate mitigation measures will reduce the potential adverse effects. These mitigation measures will be developed in the respective project-level environmental impact reports.

A. Natural Environment

The most significant effects on the natural environment will result from: 1) expansion of Ontario International Airport; 2) development of Palmdale International Airport; and 3) increased utilization of Los Angeles and Port Hueneme Harbors.

- Runway construction and other improvements at Ontario International Airport will destroy some natural vegetation. Loss of vegetation at the site will somewhat decrease the wildlife food supply. Expansion of the airport will have the secondary impact of accelerating the rate of urban development in the area. This transportation improvement occurs in an area of San Bernardino County that is undergoing a continuous urbanization process, a process that is likely to result in the complete disappearance of some species of plant life and decreased amounts of agricultural land and natural open space.

- Development of Palmdale International Airport will directly disrupt a sensitive desert ecosystem. More significantly, growth generated in the vicinity of the airport will amplify the disruption manyfold.

- Increased operations at the harbors of Los Angeles, Long Beach, and Port Hueneme will increase intentional dumping and accidental spills. A small increase in pollution in the harbor waters will result.

- Ambient noise levels will increase due to expanded transit services and increased airport operations.

- Highway construction will add to the amount of impervious ground surface thus increasing runoff. Coupled with a continued overwhelming reliance on the automobile, highway-related contaminants will increase their adverse impact on water quality.

- Several RTP projects will have a prominant visual impact on localized environments. Palmdale International, because of its size and the relatively undeveloped desert area will have a significant visual impact. Highway and aviation construction and the Regional Transit Development Program will consider the impacts further in their project-level EIRs on neighborhoods adjacent to the transportation improvements.

B. LAND USE AND URBAN FORM

For the purpose of this discussion, land-use changes in outlying areas are considered to be adverse. Land-use changes in the developed areas of the region are considered as a redistribution of existing land-use activities.

- The construction of I-15E and Route 30 and the expansion of Ontario International Airport (in conjunction with the trend of increased urbanization in the West Valley Area of San Bernardino County) will result in the removal of prime agricultural land.

- Development of Palmdale International Airport and attendant growth will convert open space and agricultural land to urban use.

- Ramp metering and other recommended congestion improvements may allow for longer commutes and encourage land-use development in outlying areas (i.e., urban sprawl).

C. ECONOMY

Adverse economic impacts of the RTP result primarily from: 1) construction-related disruption of local businesses; 2) transportation control strategies; 3) a reduced level of funds expected for highways; and 4) increased direct cost to the user.

- Construction of the recommended capital improvements may disrupt local businesses adjacent to the rights-of-way. Temporary street closure and impaired access would result in less customers and therefore reduced profits. Reduced profits could result in relocation of businesses, or even permanent closure.

- Transportation control strategies may discourage businesses from locating in certain areas due to freeway access problems.

- No addition to the current highway system could, in time, result in increased congestion. This congestion may discourage business activities that depend on good highway services.

- Higher gasoline prices will raise the cost of moving people and goods. The cost of both gasoline and, to a lesser extent, diesel fuel will increase.

- Establishing a motor vehicle inspection/maintenance program and extending emission controls to off-road mobile sources will result in direct operational costs to the user.

- Acquisition of land to establish noise buffer zones around aviation facilities may prevent land from being used for more profitable uses.

D. SOCIAL ENVIRONMENT

Adverse impacts of the 1977 RTP on the social environment can be classified as follows: 1) construction-related disruptions; 2) use-related disruptions; and 3) decreased mobility of automobile users.

- Areas adjacent to rights-of-way for construction of transit improvements such as starter line, people mover systems, and highways will be adversely impacted. In addition to noise, the following disruptions may occur: 1) unsightliness; 2) interference with local pedestrian and vehicular circulation; and 3) increased air pollution in the vicinity of the construction due to emissions from construction equipment. Most of these impacts can be mitigated with proper site planning and design.

- Construction of capital improvements may adversely impact archeological and historical sites.

- Construction of capital improvements may result in community disruption through community dissection or transformation.

- Use-related disruptions will also result from transportation management actions such as ramp metering. Local air quality and traffic circulation will be adversely impacted.

- The VMT reduction measures may reduce the personal mobility of auto users.

E. AIR QUALITY

Automobile emissions will decrease over time as a result of emission controls, VMT reductions, and other strategies in the plan (e.g., mandatory inspection/maintenance). Even with these emission reductions the National Ambient Air Quality Standard (NAAQS) for oxidant will not be reached. The region's over-reliance on the automobile means that transportation will continue to be a major, although declining, source of emissions. After the mid-1980's, stationary source emissions will combine with emissions from the growing amount of motor vehicle travel and cause nitrogen dioxide to exceed the NAAQS.

- Continued dependence on the automobile as the primary transportation mode will have adverse impacts on regional air quality. Public health will continue to be threatened by the continuing emission of pollutants into the atmosphere and the continued production of oxidant.

- Locations adjacent to and downwind of transportation improvements will notice increased pollution levels, especially CO concentrations. This will be the case when these improvements result in increased local travel and congestion (e.g., ramp metering, transit stations, park-and-ride lots, and new highways).

F. ENERGY

Due to the irreplaceable nature of energy resources, fossil fuels in particular, the use of these resources is an unavoidable adverse effect.

- Although the share of total transportation energy used by automobiles will decrease, continued use of the automobile will result in continued consumption of gasoline.

- The operation of additional buses will increase the amount of diesel fuel consumed.

- The consumption of fossil fuels will be increased by the generation of additional power required for electrified transit improvements (starter line, people movers).

- Increased aircraft and ship operations will cause aviation and marine fuel usage to rise.

mitigation measures

VII.

VII MITIGATION MEASURES

This section contains policies and actions designed to minimize the adverse environmental impacts identified in Sections V and VI. Measures taken from the 1978 DRTP are so identified in the margin.

It is important to re-emphasize that the major transportation improvements contained in the DRTP will have detailed environmental impact evaluations as well as specific mitigation measures for each project.

A. Natural Environment

The adverse impacts on the natural environment result from transporation facility construction and urban encroachment upon natural ecosystems.

The RTP's emphasis on transportation management (rather than development) and urban infilling will limit the potential adverse impacts on hazardous lands and natural resources. Specific measures that will reduce these impacts include:

- o Preserve, wherever possible, the region's natural resources and desirable land uses. DRTP
- o Encourage growth in and adjacent to existing urban areas. DRTP
- o Consider local land-use zoning policies in the transportation planning process. DRTP
- o Phase the implementation of major capital improvements to spread potential adverse impacts over a longer time period (impact will be less severe at any one point in time during extended implementation) and to take advantage of newly developed, less impacting approaches to transportation problems.
- o Plan carefully for the disposal of excess material from excavations, so as to minimize potential adverse impacts.
- o Use existing facilities for transit, highways, and aviation wherever possible. DRTP
- o Reseed (by natural and human means) vegetation and natural food sources destroyed by construction of additional transportation facilities.
- o Take a more active role in reviewing individual projects at the ports. DRTP
- o Where aquifer recharge basins are involved, examine use of special engineering techniques in construction of roads and other facilities.
- o New transportation facilities will be, where possible, protected from flooding and landslides.

- Establish noise buffer zones around airports. DRTP

- Adhere to local, state, and federal noise standards for transit facilities, aviation facilities (and aircraft), highways, automobiles, and rail facilities. DRTP

- Operators of existing airports where established poiicies now limit the levels of air transportation service should frequently reevaluate these policies in light of improvements and application of noise reduction technology. DRTP

- The State of California and SCAG definition of open space shall be used in evaluating airport impact upon open space. This definition is "land or water which is essentially unimproved and is devoted to the following open space uses: DRTP

  - Preservation of natural resources
  - Managed production of resources
  - Outdoor recreation
  - Public health and safety."

- Construct sound barriers on freeways that pass through previously established residential areas. DRTP

- Encourage regulation of development in major fault zones and areas of geologic hazard in order to decrease the risk to public safety.

- In order to meet the criteria ofthe California airport noise regulations, every effort must be made to reduce jet engine noise, including engine retrofit or early retirement of older aircraft. DRTP

- Much greater emphasis should be placed upon the development of technology to reduce the noise produced by general aviation aircraft, and particularly that emitted by business jets. DRTP

- Use architecural and design features on transportation facilities to maximize visual aesthetics.

- Preserve, wherever possible...prime agricultural lands. DRTP

B. LAND USE AND URBAN FORM

The potential adverse effect of the 1978 RTP on local and regional land use is caused by changes in existing land uses in outlying areas and by changing land use patterns within existing urban areas due to changes in access. The impacts of these land use related effects can be mitigated by the following:

- o Encourage growth in and adjacent to existing areas. DRTP
- o Consider local land-use zoning policies when recommending transportation improvements. DRTP
- o Emphasize metropolitan and short-distance transportation improvements (tends to discourage dispersal of regional land use activities). DRTP
- o County airport land use commissions should encourage land use compatibility for both present and projected future airport activity. This compatibility must be included in the planning and development of new airports, including a high priority for land acquisition. DRTP
- o Measures to assure permanent land use compatibility must be included in the planning and development of new airports, including a high priority for land acquisition. DRTP
- o Incompatible land uses around general aviation airports must be prevented. DRTP
- o Much greater emphasis must immediately be given to the development of high-speed ground transportation systems to supplement air transportation systems in local and short-haul markets, both for energy conservation reasons and to partially relieve airline airport capacity problems.

C. REGIONAL ECONOMY

Adverse economic impacts of the RTP result from 1) construction-related disruption of local businesses; 2) the need to develop new revenue sources to implement the Highway and Transit portions of the RTP, 3) loss of mobility due to some transportation control measures, and 4) direct user costs related to environmental and other transportation elements. Mitigation measures include:

- o Use existing rights-of-way wherever possible.
- o Add new transportation facilities and services when it can be shown that: the demand for the facility and/or service is reasonable and anticipated; improved management of the transportation system cannot accommodate the demand; there exist adequate capital and operating funds to finance the improvement. DRTP

- Stage transportation planning so that policies guiding long-term transportation improvements are adopted. For hardware and route decisions, consider for adoption only those improvements which can be implemented in the foreseeable future. DRTP

- Seek increased funding for transit operations. DRTP

- Every effort shall be made to maximize the use of available federal transportation grants to support transit system operating costs and capital improvements. DRTP

- Encourage local governments to use Federal Revenue Sharing funds for transit. DRTP

- Seek necessary legislation and constitutional changes to facilitate implementation of value capture financing mechanisms by transit districts. DRTP

- Encourage increased efficiency of transit operations by development and implementation of transit efficiency standards, allocation incentives, and improved data gathering and analysis capabilities. DRTP

- Encourage transit operators to establish a desired ratio of fares to subsidy. As costs increase over time, it is necessary for financial stability, that either a) this relative level be maintained through periodic review and increase of fares or b) the subsidy share of total costs be increased by increasing taxes. DRTP

- SCAG will take the necessary united action to ensure the availability of Section 3 funds to meet all reasonable capital requirements as approved in the Regional Short Range Transit Plan. DRTP

- Although it would be more appropriate for increases in gasoline taxes to be levied by state governments, it is possible that federal action may result in imposition of an additional gax tax. The region will oppose imposition of any federal tax from which revenues are not retained in the region for public transportation purposes. Federal and state efforts to increase gasoline taxes should be coordinated to avoid simultaneous imposition of taxes on the SCAG region. DRTP

- The state should seek a greater return on our federal highway user taxes than the present 65%. DRTP

- Ensure adequate funding of maintenance, rehabilitation, safety, and operational improvements on existing highway system. DRTP

- Support a 2-cent-per-gallon gasoline tax increase, with the funds to be returned directly to local governments for transportation purposes. DRTP

D. Social Environment

The potential adverse impacts of the 1978 RTP on the social environment include: 1) construction-related disruption, 2) use-related disruption, 3) visual intrusion, 4) decreased mobility, 5) long-term community disruption, and 6) possible increases in safety hazard exposure. Mitigation measures included in the plan are:

- Add new transportation facilities and services when it can be shown that: the demand for the facility and/or service is reasonable and anticipated; improved management of the transportation system cannot accommodate the demand; there exist adequate capital and operating funds to finance the improvement; and social, environmental, and other objectives are met or negative impacts in these areas are mitigated. DRTP

- Improve and expand transit service as an alternative to the auto. DRTP

- Missing link projects planned for the regional freeway network should be completed to achieve optimum system effectiveness in consistency with the Regional Transportation Plan. DRTP

- Ensure adequate funding of maintenance, rehabilitation, safety and operational improvements on the existing highway system.

- Efforts to upgrade service or add service shall be supported and priority for such service improvement shall be given to improvements in areas where transit service is substandard and in areas of greater than normal transit dependency. DRTP

- SCAG shall identify methods to allow substantial involvement by communities in plan development and in the decision-making process. In conjunction with this policy, identification of transportation needs at the community level should be incorporated as part of the planning process undertaken by the transit districts.

- Fully accessible public transportation services to persons who are physically unable to board, transfer, or maneuver on and between existing transit systems shall be provided for the transportation-handicapped. DRTP

- Transit and paratransit operators shall coordinate their planning and programming with other agencies, including city and county traffic and engineering departments. DRTP

- All plans for transportation services shall include methods to provide transportation services for persons with developmental disabilities, the physically disabled, and the elderly. DRTP

- Support and encourage an evaluation of emergency communication equipment and radio frequencies in order to design better communication systems that will help decrease response times by public safety agencies. DRTP

- Support and encourage public safety agencies to review transit designs for security needs prior to application for building permits. DRTP

- Support and encourage a greater awareness that crime prevention through physical planning of transit facilities can play an important part in the reduction and deterrence of criminal activity. DRTP

- Encourage development of uniform regional transit traffic and parking regulations as well as uniform transit signing regulations for furthering transit safety and security. DRTP

- Suggest to transit operators the desirability of developing written procedural guides to inform transit employees on how to conduct themselves during any safety and security incidents. DRTP

- The elderly and handicapped have the same right as other persons to travel and to utilize regular public transportation services. Persons with developmental disabilities, the physically disabled, and the elderly shall be provided a continuum of transportation services according to need and their degree of transportation disability. DRTP

- Encourage and promote the greater use of bicycles for all transportation purposes within the region. Specifically, encourage provisions for bicycle storage at all major facilities. DRTP

- Encourage the development and implementation of education and enforcement programs which promote a safe environment for bicycle use. DRTP

- Urge enforcement of applicable bicycle traffic laws by local governments. DRTP

E. AIR QUALITY

The continued over-reliance on the automobile as the region's primary mode of travel will have significant adverse impacts on the future regional air quality. These adverse impacts will result from an increased use of motor vehicles, including aircraft, trucks, autos, buses, ships, and miscellaneous off-road vehicles. Although it should be emphasized that due to technological controls, fuel economy standards, the inspection/maintenance program, increased transit, and other actions, mobile sources will contribute significantly less to the total emissions for the region.

Consistency Assessment

One of the major objectives of the 1978 RTP is to reduce emissions thus improving air quality for the region. Various policies and actions contained in the plan are directed at achieving this objective. These efforts have been pursued through the Plan's Transportation Air Quality Alternative. When completed, the RTP will constitute the mobile source portion of the regional Air Quality Management Plan (AQMP). The AQMP will then become the region's part of the State Implementation Plan (SIP). Consistency and conformance of the various policies and actions for an acceptable transportation control program will be addressed in the consistency assessment process.

Mitigation measures included in the 1978 RTP for these adverse impacts include:

- Achieve quantitative emission reductions in tons per day for motor vehicles in the South Coast AQMP for 1980 through 1995 with equivalent vehicle miles of travel (VMT) reductions. These reduction objectives as listed in the 1978 RTP are as follows:

EMISSION-REDUCTION OBJECTIVES
SOUTH COAST AIR QUALITY MAINTENANCE AREA

EMISSION-REDUCTION OBJECTIVES (TONS PER DAY)				EQUIVALENT REDUCTION OF LIGHT-DUTY VEHICLE (LDV) MILES TRAVELED
YEAR	NMHC	NO_x	CO	
1980	13	16	132	5
1985	15	17	76	10
1990	21	23	112	15
1995	25	31	135	20

NHMC - Non-Methane Hydrocarbons. HO_x - Nitrogen Oxides. CO - Carbon Monoxide.
TSM - Transportation System Management.

table 38

The emission reduction objectives stated in Table 38 reflect both direct and secondary effects. In addition to curtailing exhaust and evaporative emissions which constitute direct reductions, the reduction of VMT as well as implementation of the Federal fuel economy standards is expected to reduce the regional demand for petroleum fuels. As a consequence, the emissions from refineries in the region can be expected to decrease during the next two decades. Further, the emissions from distribution and marketing of these fuels also will diminish. These effects have been taken into account in evaluating the RTP emission reduction objectives.

- o In addition to those measures included in the RTP which will reduce air pollutant emissions, SCAG is preparing an Air Quality Alternative (AQA). This alternative is investigating the effectiveness of over 150 measures to improve regional air quality. The AQA will both refine the RTP by identifying specific measures to be used to implement the RTP policies, and will serve as part of the required work for compliance with the Clean Air Act of 1977. These measures include both actions in the RTP, such as ridesharing, increased transit, freeway transit and measures currently not included in the RTP, such as auto free zones, railroad electrification, and improved emission standards for these many different mobile sources.

- o In addition to the regional-scale problems presented by oxidant and NOx, the carbon monoxide emitted by motor vehicles constitutes a significant localized problem which results directly from the regional transportation system. In central business districts, parking structures, and in the neighborhood of freeways and arterials, CO concentrations are likely to be severe, as a direct consequence of vehicle concentration. Measures to relieve this condition may be based either on technological or traffic management methods. In the former case, emission controls on motor vehicles will reduce their exhaust emissions by 85% by 1995. Further controls may be imposed, such as vehicle access restrictions for central business districts (as in Singapore) or the creation of auto-free zones (as in Milan). Another possibility is to enclose CBD parking structures and remove the CO from the ventilator exhaust streams. In any such program, the effect of restrictions and/or pricing could serve to reduce auto traffic, thus shifting the travel to alternate modes and further aiding the overall emission-reduction objectives.

- o Transportation system planning within the SCAG region shall work cooperatively with the regional Air Quality Maintenance Planning process to attain federal and state health standards for ambient air quality at the earliest achievable date, and to maintain the standards thereafter. DRTP

- o Emphasize reduction of emissions and conservation of energy in review of grant applications and subregional programs for acquiring, replacing or operating transit and publicly-owned vehicles.

- Endorse California Emission Standards for light-duty vehicles. DRTP

- Encourage cities and counties to include exclusive lanes for high-occupancy vehicles on major arterials for peak-hour travel. DRTP

- Encourage enhanced bicycle use -- bike lanes, storage facilities, etc. DRTP

- Develop improved airport access, especially by transit.

- Reduce the number of short trips. The increasing significance of trips as pollution sources emphasizes the desirability of substituting other techniques to curtail journeys up to a few miles, which contribute a disproportionate share of emissions. For very short distances, bicycling and walking are reasonable alternatives. At somewhat longer distances, home delivery and other trip replacement measures need to be encouraged.

- Alter travel conditions, in order to reduce emissions through improved efficiency of system operation.

- Regulation of aircraft emissions, which by 1995 will constitute a significant fraction of the total. This could be accomplished through various operational and technological measures. For example, the ground maneuvering of jet aircraft (when their engines are operating inefficiently) could be replaced with less-polluting tow vehicles.

- State and federal air quality standards shall be criteria for planning the regional airport system. The ability to meet the air quality standards shall be shown in every airport project environmental impact statement or report, and all airport-related zoning change proposals. DRTP

- Aircraft-engine ground operating time should be reduced where safety permits. DRTP

- Aircraft noise and air pollution should be reduced to an acceptable level. DRTP

- Encourage non-motorized transportation as an alternative to the automobile. DRTP

- Encourage employers to provide bus passes for employees, sponsor carpools, vanpools, and subscription bus service, and consider using flex time. DRTP

- Endorse a mandatory annual inspection/maintenance program for light-duty vehicles in the South Coast Air Basin as one method of achieving the objectives for air quality improvements, with the provision that the Riverside program be closely monitored for cost/effectiveness prior to implementation in 1979. DRTP

F. ENERGY

As stated in Sections V and VI, the use of energy for transportation can be considered an adverse impact, under the following definitions:

- Wasteful uses involve the deliberate use of more energy to perform a function than would be required to accomplish the same basic function through an alternative means (e.g., low-occupancy auto commuting; the use of oversize vehicles for certain goods movement activities).

- Inefficient uses of energy pertain to functions which could be performed with different equipment requiring a smaller energy expenditure (e.g., manual transmission vs. automatic transmission; jet transport vs. turbo-prop; compact autos vs. standard sized autos).

- Unnecessary uses of transportation energy are those which contribute less to well-being than they cost, but are undertaken through carelessness or as the secondary consequence of another action (e.g., frequent shopping trips resulting from locational choices).

Because automobiles provide the great majority of transportation in the region, mitigation of the wasteful, inefficient, and unnecessary uses of transportation energy depends primarily on modifying automobile use. There are several ways to mitigate these adverse energy effects.

- Achieve quantitative fuel savings for energy conservation in the SCAG region for the years 1980 to 1995 with equivalent VMT reduction. These are as follows: DRTP

FUEL CONSERVATION OBJECTIVES
(MILLIONS OF GALLONS OF GASOLINE PER YEAR)

YEAR	PROJECTED CONSUMPTION OF FUEL BY LIGHT-DUTY VEHICLES	FUEL SAVINGS OBJECTIVE	PERCENTAGE SAVED
1980	5,270	263	5
1985	4,650	465	10
1990	4,240	424 to 636	10 to 15
1995	4,170	417 to 834	10 to 20

table 39

The energy objectives are based on forecasts of fuel transportation-energy consumption which take into account the fuel economy standards recently enacted by the Federal Government, together with the travel reductions which may be accomplished by the emission-reduction measures. It should be recalled that fuel conservation involves a continuing reduction of travel demand expressed as VMT reduction. This is in contrast with air quality improvement, which may be achieved through small reductions of total travel demand involving disproportionate amounts of air pollution (short trips) or by controlling new types of sources (off-road vehicles). Hence, the fuel-conservation objectives for 1980 and 1985 are consistent with the emission-reduction objectives, as both are based on VMT reduction per se.

To achieve the energy conservation objectives established for 1990 and 1995 probably will requi-e a combination of VMT reduction and an increase in average fuel economy for the regional vehicle fleet greater than that mandated by the Federal standards.

Some of the other significant RTP policies which will mitigate energy consumption in the region are:

- o At Hollywood-Burbank, Long Beach, Orange County, and Palm Springs Airports, the primary emphasis should be placed on achieving higher load-factors on commercial aircraft presently using the facilities; and, secondly, substituting quieter, higher-capacity aircraft for aircraft currently being utilized. DRTP

- o Transportation energy requirements shall be minimized by: DRTP

  - supporting planning, programming and implementation efforts which conserve energy.

  - encouraging technological changes that conserve energy.

  - educating users of transportation energy about the costs of various modal alternatives.

- o Energy consumption requirements of transportation shall be minimized by: meeting the Federal fuel economy standards through at least 1980; shifting a substantial number of single-occupant auto trips to carpools, transit, and other modes; giving strong support only to investments in modes and facilities that will result in energy-efficient travel, reducing consumption of scarce and expensive energy fuel. DRTP

- o Urge enforcement of the 55-mph speed limit. Increase public awareness of the speed limit. DRTP

- Regional, subregional, and local agencies shall emphasize efficient automobile use (to lower emissions, save energy, and reduce congestion by these means: DRTP

  - Encourage ridesharing.

  - Develop and implement traffic-operations improvements to speed and manage the flow of motor vehicles (i.e., signal synchronizing, channeling, reversible lanes, etc.) to increase efficiency.

  - Encourage technical improvements to vehicles.

  - Encourage local governments, major employers, and universities to develop parking strategies that increase ride-sharing and supplement other transportation and land use measures to improve air and conserve energy.

alternatives to the proposed plan

VIII.

VIII. ALTERNATIVES TO THE PROPOSED ACTION

The 1978 Regional Transportation Plan is basically an update of the currently adopted 1977 RTP, with two significant differences. First, it presents an Air Quality Alternative and, second, a major low-capital ride-sharing oriented program. The RTP is a policy and program document designed to aid transportation decision-making at regional, subregional, and local levels.

The original RTP, pursuant to AB 69, was developed as an integral part of the on-going process of planning for the growth and development of the SCAG region. A range of alternative transportation policies, strategies, and systems was first addressed in developing the 1974 Critical Decisions Plan. Alternatives analysis and subsequent transportation planning decisions were reflected in the 1975, 1976 and 1977 RTPs. The 1978 Plan is a statement of the most recent conclusions reached in this continuing analysis of transportation alternatives. As well, the RTP is developed in response to various legal requirements both state and federal.

AB 402 of 1977 (Chapter 1106, Status of 1977) requires that designated transportation planning agencies (e.g., SCAG) shall prepare a regional transportation plan

> "directed at the achievement of a coordinated and balanced regional transportation system, including, but not limited to, mass transportation, highway, railroad, maritime and aviation facilities and services. The plan shall be action-oriented and pragmatic considering both the short- and long-term future and shall present clear, concise policy guidance to local and state officials."

Federal regulations, issued jointly by the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration (UMTA), also require the development of a transportation plan consisting of short-range and long-range elements. This plan resulted from a continuing, cooperative, and comprehensive planning process by SCAG, local agencies, and the state, as required under federal law.

The Plan addresses other legal responsibilities. For example, the Federal Clean Air Act requires that each state adopt a plan to achieve and maintain air quality -- using, when appropriate, transportation control measures. The 1978 RTP contains policies and actions directed at improving air quality. These, combined with pollution control programs for areas other than transportation make up the regional element of the statewide plan to be prepared by the California Air Resources Board.

The Plan meets the UMTA requirement that transit services for the elderly and handicapped be improved.

The RTP will be the basis for development of the Transportation Improvement Program, and will be used in reviewing federal grant applications and projects using Local Transportation Fund (SB 325/821) moneys.

The RTP is not a detailed blueprint of the transportation system of the future. Rather, it is a policy document which provides a framework for developing a regional system. The Plan identifies regional transportation goals and objectives; sets policies from which projects can be developed, and against which proposed projects can be evaluated; outlines actions to be implemented; and presents a plan for financing programs and projects.

Projects to be implemented in the short term are listed in the Transportation Improvement Program (TIP). The RTP (planning) and the TIP (programming) complement one another. Policies and actions in the RTP form the basis for development of, and inclusion of projects in, the TIP. The TIP's specific projects implement the RTP in the short term.

In order to comply with CEQA, the following discussion will address the No-Build and other alternatives considered in the transportation planning process leading up to the 1978 RTP.

POTENTIAL ALTERNATIVES TO THE 1978 RTP

1. No RTP (unplanned transportation improvements)
2. No-Build System (1978 transit and highway network)
3. No Ridesharing Program
4. Air Quality Alternative (40% equivalent VMT reduction objective)
5. Extensive Transit Guideway System

1. No RTP

This alternative would cause several significant problems. Resource allocation would be made at the State and Federal levels, rather than at the local level. This would make it more difficult to integrate the RTP with local and subregional growth and environmental plans. It could lead to an unplanned, chaotic system, with gaps for some services (such as existing freeways), while new facilities are constructed elsewhere. This alternative is not acceptable because of these potentially negative impacts.

As well, SCAG is legally required under State and Federal designations to develop a transportion plan for the region. Lack of an RTP would go directly against the intent of AB 69, AB 402, Clean Air Act, and various other sections of Federal law.

2. No-Build System

This alternative would cause massive levels of congestion in the region, and dislocation in the most urbanized (and congested) areas. Sensitivity testing and surveys indicates that many people are unwilling to use alternative forms of transportation to the auto, and, of course, goods movement is highly dependent on a free-flowing highway system.

But without highway improvement, in 1988 about one-third of the freeways will be congested at peak periods. Major freeways (Santa Monica, San Diego, Santa Ana, Hollywood and Ventura) will average 20 mph for large portions of the route, raising travel times by 50%-100%. The miles of congested freeway will nearly double. Relief for this situation would require several hundred new lane-miles of freeway.

This alternative, by adding to congestion, will increase certain pollutants, fuel use, accidents, and wear and tear on vehicles and drivers. Further, this alternative may serve as a disincentive to new jobs being formed or located in the region.

Although the transit system is not currently operating at full capacity (especially for off-peak service), capacity will soon be reached if the system is not expanded. Adding this to the congestion problem, transit will become a less viable alternative to the auto-trip. The situation for auto-dependent persons will grow worse in comparison with those having autos. Air pollution, fuel consumption and total VMT would increase correspondingly.

Due to existing land use patterns, this alternative would have its greatest impact on the urban core areas where the feasibility of expanding the highway network is low.

The alternative would act as a disincentive to locating of new employment, housing, shopping, and other activity centers in the existing urban areas. Instead, it would encourage increased decentralization of the region.

3. No Ridesharing Program

This alternative would have some of the same impacts on the regions as the no new transit alternative. Without the rideshare program, air pollution and fuel consumption will be worse than if the program is implemented. At the same time, this alternative because of the low capital investment would have minimal impacts on the public moneys available to implement the other elements of the RTP.

4. Air Quality Alternative

This alternative calls for twice the planned emission reduction called for by the 1978 RTP (i.e., from 20% to 40% equivalent VMT reduction). While greatly improving air quality and energy consumption this alternative would increase gasoline prices and parking costs for drive alone autos. Further, it would also require electrification of all main-line railroads and other activities that would need massive public and private expenditures. Without outside funding support (state, federal, private) this program would cause economic dislocation throughout the region. Personal mobility would also be decreased due to the various travel disincentives.

5. Extensive Guideway System

This alternative would involve construction of an extensive fixed-guideway system to serve the region. Several such systems have been proposed for the region in past years, typically a 100- to 200-mile fixed-rail system. Such a system would relieve some congestion and reduce some air pollution, both LARTS modeling data and experiences at BART and Washington METRO indicate that ridership will (a) not divert sizable numbers or percentages of people from cars to the system, (b) "rob" patrons from carpools and buses, and (c) be a very expensive way of moving people. The RTP does support development of a modest 10- to 16-mile fixed-guideway system in the high-density Wilshire corridor (as part of the Regional Transit Development Program), as well as a study of fixed-guideway alternatives in Orange County. If extensive guideway seems more feasible in the future, the Wilshire and Orange County corridors can become the first parts of a larger system.

NOTE: While these specific alternatives are not evaluated in detail, more information may be gleaned from the impact and mitigation sections of this report. For example, potential benefits of the Ridesharing Program are stated in the impact matrix; from these, one can infer the converse (i.e., the potential adverse impacts of the No Ridesharing Program alternative).

other sections

IX. to XVI.

IX. THE RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The plan's recommendations emphasize more intensive uses of existing facilities and limited amounts of new development. This avoids the potential adverse effects from a large capital-improvements program and retains the options for future phased decision-making. At each step, the range of possibilities will be assessed in terms of comparative costs and benefits.

Highway construction requires changing current land uses (urban or rural) to highway purposes for an indefinite period. Construction materials, energy, labor, and financial resources are required for construction of the roadways in addition to purchase of the rights-of-way. Highway improvements that reduce congestion will enhance long-term productivity through lower auto accident rates, lower goods-movement costs, and improvements in regional mobility.

Development of the guideway transit systems, expansion of bus service, ridesharing and other VMT reduction measures in the SCAG region may reduce the need for, and in turn the use of, the automobile. To the extent that transit improvements utilize existing facilities and rights-of-way, long-term productivity will be enhanced. Limited right-of-way purchases will reduce the short-term construction costs, thereby decreasing the total long-term cost of those transit improvements. As transit service and coverage increase, transit ridership will also increase; and, in the long run, provide an alternative to the automobile. This could result in a reduction in the consumption of materials used to construct highways and fuel required to power automobiles.

The development of fixed-guideway transit systems requires the short- and long-term commitment of right-of-way and station land, construction materials, energy, labor, and fiscal resources. In the long run, the productivity of some declining activity centers may be enhanced by new development and increased land values in the vicinity of transit stations. To the extent that recycling is stimulated within corridors, productivity of the existing urban environment will be maintained.

Increased capacity at the region's airports will entail the short- and long-term use of land--eliminating open space and limited amounts of esidential uses. There will be short-term increases in the consumption of building supplies. Noise and air pollution will also be short-term (and long-term) environmental impacts of increased airport capacity. Improvements in air freight and passenger movement will enhance long-term productivity by providing increased capacity to meet future demands.

The short-term impacts caused by continued development and improvements in ground access at Los Angeles and Port Hueneme harbors include increases in water turbulence, displaced soils, and construction noises. In contrast to their short-term environmental disruptions, an increase in capacity of regional harbor facilities will enable the import and export of goods to flow more efficiently and at a lower cost.

X. IRREVERSIBLE ENVIRONMENTAL CHANGES

The plan's irreversible environmental changes result from 1) physical transformation, and 2) resource consumption.

Physical changes in the environment result from construction of new transportation facilities and from secondary development effects of transportation. The most significant changes occur from extension of transportation services into areas that are developing or areas that are sparsely developed but which have growth potential.

Prime agricultural lands will be lost in western San Bernardino County. For example, expansion of Ontario International Airport and construction of I-15E will directly consume some agricultural acreage. These projects will also accelerate the existing conversion trend of agricultural lands to urban development. Open space and potential agricultural lands will be transformed by the development of Palmdale International Airport and by induced secondary development.

New transportation improvements outside existing urban areas also disturb wildlife and wildlife habitats. Any route alignments in existing non-urbanized areas must be planned carefully to avoid irreversible changes of sensitive local habitats. Project-level EIRs must take these potential impacts into account.

Archaeological and historical sites and other unique features can also be disturbed or removed by construction. These possibilities need to be examined during corridor planning to develop mitigation measures.

Particularly in the case of capital-intensive improvements, changes of visual, aesthetic, and noise conditions tend to be irreversible. The regional core rapid transit line, additional highways, and the activities such improvements generate can permanently change adjoining areas along the routes, although certain designs can minimize adverse impacts. When new capital improvements are constructed through communities, highway- and transit-related permanent disruption results from both right-of-way acquisition and adjacent secondary development.

Resources consumed or precluded from future use are further examples of irreversible environmental changes. Energy and materials used in construction are irreversibly committed (with the exception of some salvageable materials). Potential resource sites may be covered by urban development preventing future extraction. For example, urban development in the Los Angeles basin is covering valuable sources of sand and gravel. In time, this will increase construction costs as more remote sources must be used.

In addition, actions undertaken in implementing the plan have associated opportunity costs. That is, the resources (energy, labor, money, materials, etc.) expended on transportation cannot be used for other purposes. Opportunities for applying those resources for the provision of other goods and services are forgone in favor of transportation.

XI GROWTH-INDUCING IMPACTS

Two types of growth are associated with this discussion of impacts: population growth (increases in total regional population) and economic growth (increases in total regional income or product). Both of these involve changes in the region's spatial distribution of population and economic activities.

Implementation of the Regional Transportation Plan will not induce additional regional population growth; however, the RTP assumes that this type of growth will occur consistent with the policies of the Regional Development Guide.

Changes in spatial distribution of economic activities generally occur in 1) areas that are rapidly developing, 2) locations of new large-scale transportation facilities, or 3) areas undergoing substantial renewal.

As previously discussed in the impacts section of the Environmental Impact Report, actions such as the expansion of Ontario International Airport and construction of I-15E will accelerate the trend toward rapid development in western San Bernardino and Riverside Counties. The new Palmdale International Airport will attract people and economic activity to the Palmdale area. Development of regional core rapid transit system and Downtown People Mover will support redevelopment activities in the urban core and Wilshire corridor.

In addition to the stimulus created by changing land-use patterns and increased population, the RTP will lead to improvements at airports and harbors in the region.

Improved ground access to goods-movement facilities at Port Hueneme and Los Angeles Harbors would increase harbor-related activities (warehousing, etc.). Likewise, further development of LAX and Ontario International Airports would also stimulate new growth in their areas.

The above land-use changes would take a considerable amount of time to occur, due to the costs of moving, reluctance to change established communications networks, and the "friction" of new firms having to overcome original patterns of settlement.

XII IMPACTS FOUND TO BE NOT SIGNIFICANT

The review and approval process that will be used for the DEIR will determine if all impacts of potential significance have been included in the analysis.

XIII ORGANIZATIONS TO BE INFORMED/CONSULTED

The DRTP/DEIR will be mailed to a broad range of agencies and people in the region. In the process of developing the final EIR for 1978, SCAG will need to coordinate with these groups. Attached is a listing of the organizations that were consulted for last year's final RTP/EIR. For the 1978 Final EIR this chart will be updated after the review process.

XIV PUBLIC COMMENTS AND RESPONSES

This section will contain a listing of representative comments on the RTP/EIR, along with SCAG's official response. The primary sources for these comments will be agencies receiving the DRTP/DEIR, the RTP Workshops, SCAG Committee review, and the Public Hearing in Los Angeles (June 22, 1978).

Organizations to be Informed/Consulted

California Energy Planning Council

California Air Resources Board

California Coastal Zone Conservation Commission

California South Coast Regional Commission

CALTRANS

California Regional Water Quality Control Board

IVAG

Los Angeles City Harbor Dept.

Los Angeles City Planning Dept.

Los Angeles City Community Redevelopment Agency

Los Angeles County Regional Planning Dept.

Los Angeles County Road Dept.

Los Angeles County Museum of Natural History

Los Angeles County Transportation Commission

Orange County Environmental Management Agency

Orange County Transportation Commission

Riverside County Planning Dept.

Riverside County Transportation Commission

SANBAG

San Bernardino County Planning Dept.

South Coast Air Quality Management District

Southern California Rapid Transit District

U.S. Environmental Protection Agency

U.S. Federal Energy Administration

Ventura County Environmental Health Department

Ventura County Planning Department

Ventura County Road Department

XV GLOSSARY

Term	Definition
Accessibility	Characteristic of the transportation system itself and not of users of that system. It relates to the geographic coverage of the system, time of operation, the way various transportation links connect, and the travel time required to reach any area within the region.
Full Accessibility	That characteristic of both demand-responsive and fixed-route systems that allows the maximum number of disabled persons in each disability category to move freely, unencumbered by barriers, on and between systems, from origin to desired destination. Specifically, full accessibility has three components: 1. Access to vehicles, 2. Access within and between modes, 3. Access to opportunities. In practice, conversion of existing services and facilities to a higher level of accessibility can be accomplished by eliminating travel barriers associated with each of these three components.
Action	A specific activity to be undertaken in the near-term as a step toward achieving a particular policy or objective.
Arterial	General term denoting a roadway primarily for through traffic, usually on a continuous route.
Article 19	Article of the State Constitution. Designates how State taxes on motor fuel and motor vehicles may be used for streets and highways and guideway transit.
Barrier Reduction	Planning or action to reduce or eliminate impediments to movement by the elderly and physically handicapped in transportation systems and public facilities, or in the design thereof.
Bus-on-Freeway	Line-haul express bus service on existing and future freeways.
Bypass	A reserved traffic lane in a metered freeway ramp entry which permits buses or high-occupancy vehicles to bypass the ramp traffic control signal when entering the freeway.
Carpool	Prearranged automobile ride-sharing.

Circulation/ Distribution System	Provision of transit service in an activity center (such as downtown Los Angeles or Westwood) for improved intra-area circulation. May involve use of such measures as pedestrian overcrossings, mini-buses, or moving sidewalks. One element of the Regional Transit Development Program is a circulation/distribution system for the Bunker Hill-Central Business District area of Los Angeles.
Community Level Transit	System providing transit service within a local community.
Commuter Computer	Common name for non-profit corporation Commuter Transportation Services, Inc., which provides information to aid the formation of carpools and ride sharing.
Commuter Rail	Operation of rail service on existing railroad lines for service to commuters.
Constrained/ Unconstrained Financial Plan	The 1977 RTP has both a constrained and an unconstrained financial plan. The constrained plan limits construction, maintenance, and operation of the transportation system to that which can be funded without increasing taxes and using available state and federal funds. The unconstrained plan is the cost of funding all improvements recommended in the RTP. To fund this total package would require an increase in taxes.
County Transportation Commission	AB-1246 created County Transportation Commissions in Los Angeles, Orange, Riverside and San Bernardino Counties for the purpose of short-range transportation planning. SCAG will be working closely with these commissions.
Disincentives	Measures designed to discourage certain actions or behavior. These include: parking surcharges, increased gasoline taxes (if intended to decrease travel), and ramp metering.
Demand-Responsive/ System	A transportation system which responds to the requests of users; may be non-stop or multi-stop service to destinations, e.g., Dial-a-Ride, taxi.
Dial-A-Ride	Transit service where individual trips are scheduled by means of a telephone call. The service is flexible, only responds to demands, and is usually provided by a van or mini-bus.
Directional Flow Experiments	Use of one-way traffic flow on selected major arterials to accommodate peak hour traffic and decrease travel time.
Efficiency Standards	Criteria used to measure the operating efficiency of transit systems in terms of service provided and costs involved.

Elderly	Persons 60 years of age or older.
E/H Interim Program	A SCAG interim or near-term program to provide more accessible transportation to the elderly and the handicapped through identifying and eliminating barriers to travel on existing transit systems and identifying transportation services by other than municipal and district systems.
Express Busway	An exclusive freeway lane either separated from or on one of the lanes of the freeway, e.g., the San Bernardino Freeway Express Busway, that allows buses to operate separate from normal traffic.
Facility	A facility allowing a transportation mode to operate (including travel, as well as discharge and loading of pasengers). This includes highways, guideways, terminals, and administrative support facilities.
Fixed-Guideway System	A transit system with an exclusive guideway. This could be a rail transit system, a separated roadway for use of buses only, or other means of providing a separate right-of-way for transit.
Fixed-Route Transit Service	Scheduled service operating repeatedly over the same street or highway pattern on a determined schedule.
Free-Flow Condition	Freeway condition where traffic flow is uninterrupted by stopping or excessive slowing.
General Aviation	All aircraft which are not commercial airlines, air-carrier aircraft or military aircraft.
Goal	A goal describes a desired condition or set of conditions toward which effort should be directed.
Ground Access	Ability of air passengers and air freight handlers to reach airport terminals through use of automobile, public transit, taxi, or other means of ground surface.
Growth Forecast Policy	SCAG adopts forecasts of future population, housing, land use and employment which modify current trends. These growth forecast policies then become the basis for planning, grant reviews and sizing future public facilities.
Handicapped	Those individuals who, by reason of illness, injury, age, congenital malfunction, developmental disabilities, or other permanent or temporary incapacity or disability, including

Handicapped (Continued)	those who are non-ambulatory wheelchairbound and those with semi-ambulatory capabilities, are unable without special facilities or special planning and design to utilize mass transportation facilities and services as effectively as persons who are not so affected.
High-Occupancy Vehicle (HOV)	Motor vehicle occupied by two or more persons. Vehicles include automobiles, vans, buses, and taxies.
Incentives	Measures designed to encourage certain actions or behavior. These include inducements for the use of carpools, buses, and other high-occupancy vehicles in place of single-occupant automobile travel, e.g., preferential freeway lanes and parking, ramp bypasses, bus passes.
Inspection Maintenance Program	A program of periodic vehicle inspections to reduce air pollution. If, upon inspection, certain emission standards are exceeded, specific vehicle maintenance would be recommended, e.g., tune up, catalytic converter replacement.
Institutional Arrangements	The method of coordinating between agencies involved in related activities. This includes formal and/or operational relationships between transportation services, facilities, and control.
Inter-modal Transfer Points	Transportation terminals or locations where people can change their travel from one mode to another, i.e., auto to bus, bus to airline, etc.
Jitney	Motor vehicle operating continuously over a fixed route and supplying service to passengers who hail a ride any place along the routes.
Joint Powers Authority	A legally binding agreement between two or more units of government which establishes a multi-jurisdictional special district with specified powers and responsibilities.
Light-Duty Vehicle	Any motor vehicle weighing 6,000 pounds or less (most passenger automobiles).
Local Transportation Fund	Pool of funds from state sales tax established by SB-325 and SB-821 for local transportation purposes, e.g., community level bus system, bikeways.
Maintenance/ Rehabilitation	Activities associated with keeping the existing transportation system in a safe and usable state and protecting the public's investment.

Maritime	Transportation facilities or operations relating to ports, harbors, and water travel.
Memorandum of Understanding	Formal document between agencies defining inter-agency coordination and agency responsibilities. The SCAG public transit operator Memorandum of Understanding is an example.
Metro	Geographic area which is reasonably self-sufficient and geographically cohesive. It may or may not be encompassed by a single political boundary, e.g., the Wilshire District of Los Angeles or the City of San Bernardino.
Missing Link	A section of roadway to be constructed to freeway or expressway standards connected to completed portions of a designated route or connecting a constructed portion of a designated rote to one other major facility where the proposed section is less than six miles in length and provides a continuity of service in an established travel corridor.
Mixed Flow	Traffic movement having autos, trucks, buses, and motorcycles sharing traffic lanes.
Mobility	Mobility is a transportation system user characteristic. It refers to the ability of the user to take advantage of the available transportation services.
Mode	A means or method of conveyance, e.g., auto, airplane, bicycle, bus, etc.
Multi-modal	Involving more than one mode of travel.
Non-motorized	Transportation that is not powered by a motor, e.g., horseback riding, bicycling, hiking, walking, etc.
Objective	Precise and quantifiable statements of ends to be achieved in advancing toward goals.
Off-Road Vehicle	Vehicles which do not operate on the public road and highway system, e.g., dirt bikes, snowmobiles, farm machinery, construction equipment.
Operator	Agency responsible for providing a service or operating a facility, e.g., SCRTD is a transit operator, CALTRANS is the operator of the state highway system.
Paratransit	Those types of public transportation whose characteristics are between those of the private automobile and conventional scheduled transit, e.g., taxis, jitneys, dial-a-ride, carpools, vanpools, subscription bus service.

Parking Management Strategies	Planned procedures whereby automobile parking in metropolitan areas is controlled or managed for purposes of controlling traffic, access, and mobility.
Peak Period	Refers to the time of most intensive use of a service or facility. In terms of travel, generally there is a morning and an afternoon peak on the region's streets and highways.
Phased Decision-Making	The phasing of decisions so that actions that are needed in the short-term are taken, but options are not foreclosed for future action.
People Mover	A public transportation system where waiting time is minimal and usually consists of small vehicles or continuous conveyance operating over short distances, e.g., moving sidewalks, automated cars. A specific type of circulation/distribution system.
Person Trip	A trip made by a person.
Planning Policies	Policies which direct the course of future transportation planning in the region.
Preferential Treatment	Privileged treatment for high-occupancy vehicles and buses in the use of traffic lanes, freeway lanes and entry ramps, parking facilities, and traffic control for the purpose of inducing shifts to HOVs and buses.
Preliminary Engineering	Engineering design and cost analysis conducted prior to final detailed design and construction.
Private Sector	Non-governmental, profit oriented service providers. The economy minus the governmental sector.
Policy	A policy is a guide for decision-making. Policies imply commitment to goals and define courses of action directed toward fulfilling these goals.
Project Development	Preliminary engineering and environmental assessment conducted prior to the start of project construction.
Proposition 5	Ballot proposition adopted in 1974 which allows the use of gas tax funds available to a county area to be diverted to guideway transit use if the voters' county has passed a similar local proposition. In the SCAG region only Los Angeles County voters have adopted such a local proposition.

Public Transit	Transportation service by bus, rail, paratransit, airplane, and ship offered by an operator on a scheduled basis to the general public.
Ramp Metering	Traffic signal control on an entry ramp to a freeway for regulating vehicle access.
Region	The SCAG region is composed of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.
Regional Transit Development Program	The adopted four-element program for improved transit service consisting of a transportation system management element, regional high-level bus-on-freeway system, Los Angeles downtown circulation-distribution system, and a regional core area rapid transit element.
Revenue Bond	Bonds whose principal and interest are payable exclusively from earnings of a public enterprise.
Route Deviation Service	A transit system where the transit vehicles purposely deviate from their routes to provide more direct service to their patrons.
Section 5	The UMTA Act of 1964, as amended by the Urban Mass Transit Assistance Act of 1974, provides a six-year mass transportation assistance program (capital or operating assistance) for urbanized areas apportioned on the basis of a statutory formula.
Short-Range Transit Plan	The five-year plan for development of transit service in the SCAG region.
South Coast Air Quality Maintenance Area	Area designated by the state for the purpose of air quality planning. The area encompasses portions of Ventura, Los Angeles, Orange and Riverside Counties, contains 97% of the region's population, and is the most seriously impacted portion of the region in terms of air quality.
Starter Line	The initial segment of a fixed-guideway transit system.
Subregion	A county or other smaller area within the SCAG six-county region.
Subscription Bus Service	Prearranged ride sharing of regularly scheduled transportation service, for which passengers generally agree to pay a monthly fee.

System Development	Capital intensive additional development of the transportation system including road construction, rapid transit, expanded ports and new airports.
System Management	Making better use of the existing transportation, using such methods as encouraging carpooling, increasing transit ridership, and increasing the carrying capacity of highways, airports and other facilities. Generally, these methods cost less and can be implemented more quickly than system development actions.
System Policies	Policies applicable to the entire transportation system.
Traffic Management (Traffic operational Improvements	Regulation and control of the movement of traffic to expedite flow and reduce congestion. Techniques include signal synchronization and restriping to provide left turn lanes.
Transit Corridors	A path several miles in length and one-quarter mile to one mile wide within which line-haul transit service is provided or planned. An example is the Wilshire corridor.
Transit-Dependent	Individual(s) dependent on public transit to meet private mobility needs, e.g., unable to drive, not a car owner, not licensed to drive, etc.
Transit Service Policies	Policies which establish a priority rating for allocation of available resources based on minimum coverage and intensity standards for local service. The first priority is to maintain existing service, second is to improve service to below-standard areas, and third is to support service improvements to above-standard areas.
Transportation Systems Management (TSM)	An element of the Regional Transportation Plan which addresses short-term improvements to maximize the efficiency of the existing transportation system. Areas for review include traffic engineering, public transportation, regulations, pricing structures, management, and operational improvements (does not include system development).
Value Capture Financing	Emergent concept based upon the ability to recoup the social and economic benefits created by the construction of a public facility (e.g., transit system), through the amount of income generated from the enhancement--the increased value--of real property. Tax increment financing is one example of a value capture financing technique.

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